DRAFT
Framework Adjustment 51
To the Northeast Multispecies FMP

This document is under development and will be modified
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Prepared by the
New England Fishery Management Council
In consultation with the
Mid-Atlantic Fishery Management Council
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1.0 Executive Summary

In New England, the New England Fishery Management Council (NEFMC) is charged with developing management plans that meet the requirements of the Magnuson-Stevens Act (M-S Act). The Northeast Multispecies Fishery Management Plan (FMP) specifies the management measures for thirteen groundfish species (cod, haddock, yellowtail flounder, pollock, plaice, witch flounder, white hake, windowpane flounder, Atlantic halibut, winter flounder, redfish, Atlantic wolffish, and ocean pout) off the New England and Mid-Atlantic coasts. The FMPs have been updated through a series of amendments and framework adjustments. The most recent multispecies amendment, published as Amendment 16, was submitted for review by the National Marine Fisheries Service in October 2009 and became effective on May 1, 2010. This amendment adopted a broad suite of management measures in order to achieve fishing mortality targets and meet other requirements of the M-S Act. Included in Amendment 16 was a process for setting specification for the fishery and updating measures through framework actions. Framework 44 to the FMP set specifications for fishing years (FY) 2010 – 2012. It became effective concurrently with Amendment 16 on May 1, 2010. Framework 45 modified several management measures to improve administration of the fishery and revised several specifications; it was implemented May 1, 2011. Framework 46 was implemented September 14, 2011 and modified the provisions that restrict mid-water trawl catches of haddock. Framework 47 was implemented May 2, 2012 and made changes to the Atlantic Sea Scallop FMP, the Ruhle trawl definition, clarified regulations governing charter/party vessel access to groundfish closed areas and modified measures for the common pool fishery. This framework would provide additional modification to the management program.

Amendment 16 made major changes to the FMP. For several groundfish stocks, the mortality targets adopted by Amendment 16, and the resulting specifications in Framework 44, represented substantial reductions from existing levels. For other stocks, the mortality targets were at or higher than existing levels and mortality could remain the same or even increase. Because most fishing trips in this fishery catch a wide range of species, it is impossible to design effort control measures that will change mortality in a completely selective manner for individual species. The management measures adopted by Amendment 16 to reduce mortality where necessary were also expected to reduce fishing mortality unnecessarily on other, healthy stocks. As a result of these lower fishing mortality rates, yield from healthy stocks could be sacrificed and the management plan may not provide optimum yield - the amount of fish that will provide the greatest overall benefit to the nation. Amendment 16 created opportunities to target these healthy stocks. The FMP allows vessels with groundfish permits to either fish under the days-at-sea (DAS) effort control system or to join sectors, which are small groups of self-selected fishermen that receive an allocation of annual catch entitlement (ACE) based upon the catch history of each member. The Amendment also adopted a system of Annual Catch Limits (ACLs) and Accountability Measure (AMs) that are designed to ensure catches remain below desired targets.

This framework action would continue to improve management of the fishery. It incorporates the results of new stock assessments into the setting of specifications and selection of rebuilding strategies. It also makes several modifications to the administration of Annual Catch Limits (ACLs) and Accountability Measure (AMs). These measures are being modified in response to experience with the management program in FY 2010.

The *need* for this action is. There are several *purposes*: .

Proposed Action

If the Preferred Alternatives identified in this document are adopted as the Proposed Action, this action would . Details of the measures summarized below can be found in Section XX. If the Proposed Action adopts the Preferred Alternatives, the following measures would be implemented.

The Preferred Alternatives include:

- .
    - .

Summary of Environmental Consequences

The environmental impacts of all of the alternatives under consideration are described in Section XX. Biological impacts are described in Section XX, impacts on endangered and other protected species are described in Section XX, impacts on essential fish habitat are described in Section XX, the economic impacts are described in Section XX, and social impacts are described in Section XX. Cumulative effects are described in Section XX. Summaries of the impacts should the Proposed Action be based on the Preferred Alternatives are provided in the following paragraphs.

Biological Impacts

Essential Fish Habitat (EFH) Impacts

Impacts on Endangered and Other Protected Species

Economic Impacts

Social Impacts

Alternatives to the Proposed Action

If the Proposed Action is based on the Preferred Alternatives there are a number of alternatives that would not be adopted. In most (but not all) cases these alternatives are the No Action alternatives. These alternatives are briefly described below.

Impacts of Alternatives to the Proposed Action

In many cases, the No Action alternatives would not have met current requirements of the M-S Act. Only the most significant impacts are highlighted below.

Biological Impacts

Essential Fish Habitat

Impacts on Endangered and Other Protected Species

Economic Impacts

Social Impacts

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3.0 Introduction and Background

3.1 Background

The primary statute governing the management of fishery resources in the Exclusive Economic Zone (EEZ) of the United States is the Magnuson-Stevens Fishery Conservation and Management Act (M-S Act). In brief, the purposes of the M-S Act are:

(1) to take immediate action to conserve and manage the fishery resources found off the coasts of the United States;

(2) to support and encourage the implementation and enforcement of international fishery agreements for the conservation and management of highly migratory species;

(3) to promote domestic and recreational fishing under sound conservation and management principles;

(4) to provide for the preparation and implementation, in accordance with national standards, of fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery;

(5) to establish Regional Fishery Management Councils to exercise sound judgment in the stewardship of fishery resources through the preparation, monitoring, and revisions of such plans under circumstances which enable public participation and which take into account the social and economic needs of the States.

In New England, the New England Fishery Management Council (NEFMC) is charged with developing management plans that meet the requirements of the M-S Act.

The Northeast Multispecies Fishery Management Plan (FMP) specifies the management measures for thirteen groundfish species (cod, haddock, yellowtail flounder, pollock, plaice, witch flounder, white hake, windowpane flounder, Atlantic halibut, winter flounder, yellowtail flounder, ocean pout, and Atlantic wolffish) off the New England and Mid-Atlantic coasts. Some of these species are sub-divided into individual stocks that are attributed to different geographic areas. Commercial and recreational fishermen harvest these species. The FMP has been updated through a series of amendments and framework adjustments.

Amendment 16, which became effective on May 1, 2010, was the most recent amendment to adopt a broad suite of management measures in order to achieve the fishing mortality targets necessary to rebuild overfished stocks and meet other requirements of the M-S Act. In 2011, the NEFMC also approved Amendment 17, which allowed for NOAA-sponsored state-operated permit banks to function within the structure of Amendment 16. Amendment 16 greatly expanded the sector management program and adopted a process for setting Annual Catch Limits that requires catch levels to be set in biennial specifications packages. Several lawsuits are challenging various provisions of Amendment 16, including the amendment’s provisions related to sectors and some of the accountability measures.

Seven framework adjustments have updated the measures in Amendment 16. The first, published as Framework 44, became effective on May 1, 2010 concurrently with Amendment 16. It adopted the required specifications for regulated northeast multispecies stocks for fishing years 2010-2012, as well as stocks managed by the U.S./Canada Resource Sharing Agreement. It was also used to incorporate the best available information in adjusting effort control measures adopted in Amendment 16. Framework 45 became effective on May 1, 2011. It built upon revisions made to the sector program in Amendment 16 and Framework 44, set specifications required under the U.S./Canada Resource Sharing Agreement, and incorporated an updated stock assessment for pollock. Framework 46 was implemented in September 14, 2011 and modified the provisions that restrict mid-water trawl catches of haddock. Framework Adjustment 47 was implemented May 1, 2012 and set specifications for some groundfish stocks for FY 2012-2014, modified AMs for the groundfish fishery and the administration of the scallop fishery AMs, revised common pool management measures. Framework Adjustment 48 (FW 48) was partial implemented on September 30, 2013; some measures in FW 48 are still in review. That action proposes revised status determination criteria for several stocks, modifies the sub-ACL system, adjusts monitoring measures for the groundfish fishery, and changes several accountability measures (AMs). Framework Adjustment 50 was also implemented on September 30, 2013 which set specifications for many groundfish stocks and modified the rebuilding program for SNE/MA winter flounder. Framework Adjustment 49 is a joint Northeast Multispecies/Atlantic Sea Scallop action that modifies the dates for scallop vessel access to the year-round groundfish closed areas; this action was implemented on May 20, 2013.

This framework (Framework Adjustment 51, FW51) is primarily intended to meet regulatory requirements by modifying the rebuilding programs and setting specifications for some of the groundfish stocks. FW51 also would establish additional management measures related to U.S./Canada shared stocks and yellowtail flounder in the groundfish and scallop fisheries.

3.2 Purpose and Need for the Action

Under the Northeast Multispecies FMP the NMFS Regional Administrator, in consultation with the Council, is required to determine the specifications for the groundfish fishery. The best available science is reviewed to determine the status of the resource and fishery. These data, in conjunction with the ABC control rules adopted in Amendment 16, are used to set appropriate specifications for the stocks. Previous actions have established evaluation protocols and rebuilding plans for stocks; these are revised with the updated science. Periodic frameworks are used to adjust strategies in response to the evaluations that adjust rebuilding plans and overfishing.

This framework adds to elements of Amendment 16 to prevent overfishing. Similar modifications to Amendment 16 have been made in recent frameworks. This framework (Framework Adjustment 51, FW51) is primarily intended to meet regulatory requirements by modifying the rebuilding programs for Gulf of Maine cod and American plaice and setting specifications for white hake and stocks managed by the U.S./Canada Resource Sharing agreement (Eastern Georges Bank cod, Eastern Georges Bank haddock, and Georges Bank yellowtail flounder). FW51 also would establish an accountability measure for the Georges Bank yellowtail flounder sub-ACL in small-mesh fisheries, a mechanism to transfer quota between US and Canada shared stocks, a mechanism to transfer Eastern Georges Bank haddock quota to Western Georges Bank haddock quota, a revised discard strata for Georges Bank yellowtail flounder, and possession of yellowtail flounder in the scallop fisheries.

These specifications and adjustments to Amendment 16, listed in the following table, are intended to meet the goals and many of the objectives of the Northeast Multispecies FMP, as modified in Amendment 16.

To better demonstrate the link between the purpose and need for this action, the following table summarizes the need for the action and corresponding purposes.

Need for Framework 51	*Corresponding Purpose for Framework 51*
Modify rebuilding program for Gulf of Maine cod and American plaice consistent with the status of stocks, the National Standard guidelines, and the requirements of the MSA	• Modification of the formal rebuilding program for Gulf of Maine cod • Modification of the formal rebuilding program for American plaice • Administrative measure to outline the steps to review the revised Gulf of Maine cod rebuilding plan • Administrative measure to outline the steps to review the revised American plaice rebuilding plan
Set specifications for ACLs in Fishing Years 2014-2016 consistent with best available science, the ABC control rules adopted in Amendment 16 to the Northeast Multispecies FMP, the International Fisheries Agreement Clarification Act, and the most recent relevant law	• Measures to adopt ACLs, including relevant sub-ACLs and incidental catch TACs • Measures to adopt TACs for U.S./Canada area
Modify management measures in order to ensure that overfishing does not occur consistent with the status of stocks, and the requirements of MSA of 2006	• Measures to establish an accountability measure for the Georges Bank yellowtail flounder sub-ACL in small-mesh fisheries • Measures to establish an call-in to request an observer requirement for small-mesh fisheries in the GB yellowtail flounder stock area • Measure to provide a mechanism to transfer quota between US and Canada shared stocks, • Measures to establish a mechanism to transfer Eastern Georges Bank haddock quota to Western Georges Bank haddock quota, • Measures to revise the discard strata for Georges Bank yellowtail flounder • Measure to address the possession of GB and SNEMA yellowtail flounder in the limited access scallop fishery.

3.3 Brief History of the Northeast Multispecies Management Plan

Groundfish stocks were managed under the M-S Act beginning with the adoption of a groundfish plan for cod, haddock, and yellowtail flounder in 1977. This plan relied on hard quotas (total allowable catches, or TACs), and proved unworkable. The quota system was rejected in 1982 with the adoption of the Interim Groundfish Plan, which relied on minimum fish sizes and codend mesh regulations for the Gulf of Maine and Georges Bank to control fishing mortality. The interim plan was replaced by the Northeast Multispecies FMP in 1986, which established biological targets in terms of maximum spawning potential and continued to rely on gear restrictions and minimum mesh size to control fishing mortality.

Amendment 5 was a major revision to the FMP. Adopted in 1994, it implemented reductions in time fished (days-at-sea, or DAS) for some fleet sectors and adopted year-round closures to control mortality. A more detailed discussion of the history of the management plan up to 1994 can be found in Amendment 5 (NEFMC 1994). Amendment 7 (NEFMC 1996), adopted in 1996, expanded the DAS program and accelerated the reduction in DAS first adopted in Amendment 5. After the implementation of Amendment 7, there were a series of amendments and smaller changes (framework adjustments) that are detailed in Amendment 13 (NEFMC 2003).

Amendment 13 was developed over a four-year period to meet the M-S Act requirement to adopt rebuilding programs for stocks that are overfished and to end overfishing. Amendment 13 also brought the FMP into compliance with other provisions of the M-S Act. Subsequent to the implementation of Amendment 13, FW 40A provided opportunities to target healthy stocks, FW 40B improved the effectiveness of the effort control program, and FW 41 expanded the vessels eligible to participate in a Special Access Program (SAP) that targets GB haddock. FW 42 included measures to implement the biennial adjustment to the FMP as well as a Georges Bank yellowtail rebuilding strategy, several changes to the Category B (regular) DAS Program and two Special Access Programs, an extension of the DAS leasing program, and introduced the differential DAS system. FW 43 adopted haddock catch caps for the herring fishery and was implemented August 15, 2006.

Amendment 16 was adopted in 2009 and provided major changes in the realm of groundfish management. Notably, it greatly expanded the sector program and implemented Annual Catch Limits in compliance with 2006 revisions to the M-S Act. The amendment also included a host of mortality reduction measures for “common pool” (i.e. non-sector) vessels and the recreational component of the fishery. An appeal of the lawsuit filed by the Cities of Gloucester and New Bedford and several East Coast fishing industry members against Amendment 16 was heard by the U.S. Court of Appeals for the First Circuit in Boston in September, 2012. The court ruled against the plaintiffs and the provisions of Amendment 16 were upheld. Framework 44 was also adopted in 2009, and it set specifications for FY 2010 – 2012 and incorporated the best available information in adjusting effort control measures adopted in Amendment 16. Framework 45 was approved by the Council in 2010 and adopts further modifications to the sector program and fishery specifications; it was implemented May 1, 2011. Framework 46 revised the allocation of haddock to be caught by the herring fishery and was implemented in August 2011. Amendment 17, which authorizes the function of NOAA-sponsored state-operated permit bank, was implemented on April 23, 2012. Framework 47, implemented on May 1, 2012, set specifications for some groundfish stocks for FY 2012 – 2014, modified AMs for the groundfish fishery and the administration of the scallop fishery AMs, and revised common pool management measures; modification of the Ruhle trawl definition and clarification of regulations for charter/party and recreational groundfish vessels fishing in groundfish closed areas were proposed under the RA authority. Framework Adjustment 48 (FW 48) was partial implemented on September 30, 2013; some measures in FW 48 are still in review. That action proposes revised status determination criteria for several stocks, modifies the sub-ACL system, adjusts monitoring measures for the groundfish fishery, and changes several accountability measures (AMs). Framework

Adjustment 50 was also implemented on September 30, 2013 which set specifications for many groundfish stocks and modified the rebuilding program for SNE/MA winter flounder. Framework Adjustment 49 is a joint Northeast Multispecies/Atlantic Sea Scallop action that modifies the dates for scallop vessel access to the year-round groundfish closed areas; this action was implemented on May 20, 2013.

A more detailed description of the history of the FMP is included in Amendment 16, and each of these actions can be found on the internet at http://www.nefmc.org.

3.4 National Environmental Policy Act (NEPA)

NEPA provides a structure for identifying and evaluating the full spectrum of environmental issues associated with Federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document includes the required NEPA analyses.

4.0 Alternatives Under Consideration

4.1 Updates to Status Determination Criteria, Formal Rebuilding Programs and Annual Catch Limits

4.1.1 Gulf of Maine Cod Rebuilding Strategy

4.1.1.1 Option 1: No Action

The current rebuilding strategy for Gulf of Maine (GOM) cod, adopted in Amendment 13, uses a fishing mortality target that is calculated to rebuild the stock by 2014 with a 50 percent (median) probability of success. The stock is unlikely to rebuild by that date in the absence of all fishing mortality and in 2012, the Council was notified that the current rebuilding strategy had not resulted in adequate progress towards rebuilding. As a result, section 304(e)(3) of the Magnuson-Stevens Act requires that a revised rebuilding program be implemented within 2 years for GOM cod. This No Action alternative would not address this Magnuson-Stevens Act requirement. If this option is adopted fishing mortality (set at 75% F_{MSY}) as implemented in FW 50 would be maintained in 2014. However because the stock is not projected to be rebuilt by 2014, fishing mortality would be based on incidental bycatch (i.e.., set as close to zero as possible) starting in 2015.

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4.1.1.2 Option 2: Revised Rebuilding Strategy for Gulf of Maine Cod

Two options are being considered for a revised rebuilding strategy for GOM cod. Both rebuilding options assume no changes to the FY 2014-2015 ABC (1,550 mt) that was previously recommended by the SSC, and adopted by FW 50.

<u>Sub-Option A</u>: This strategy would rebuild the stock in 8 years, with a 50 percent (median) probability of success by 2022. This strategy is developed to be more conservative compared to sub-Option B. This strategy is based on a fishing mortality that is above 75%F_{MSY}; $F_{rebuild}$ is not allowed to be initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}).

<u>Sub-Option B</u>: This strategy would rebuild the stock in 10 years, with a 50 percent (median) probability of success by 2024. This strategy is based on a fishing mortality that is above 75%F_{MSY}; $F_{rebuild}$ is not allowed to be initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}).

Rationale: Long-term projections have often proven to be unreliable and tend to be optimistic. There is also considerable uncertainty surrounding $F_{rebuild}$ (and other reference points such as 75%F_{MSY}) estimates due to the estimate's dependence on future recruitment, which is difficult to predict. As a result, basing an ABC on $F_{rebuild}$ is not desirable since it can quickly lead to dramatic reductions in the ABCs. As $F_{rebuild}$ approaches zero, it is less likely to be used for ABC determinations. To avoid the uncertainties associated with $F_{rebuild}$-based ABCs, the rebuilding strategies were designed to prevent $F_{rebuild}$ from being initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}). During the rebuilding time period, catch advice would continue to be set consistent with the ABC Control Rule adopted in A16. GOM cod requires at least eight years for $F_{rebuild}$ to remain above 75%F_{msy}. $F_{rebuild}$ was estimated to be below F_{MSY} with the maximum 10 year rebuilding plan. This program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary. There is little difference in the rebuilding time needed under the accepted base case or M-ramp model (M=0.2 in projections) for GOM cod; no reference points are available for the M-ramp model. However the catches estimated in the out years and the SSB_{MSY} are different between the models. The M-ramp projection assumes a change in M back to 0.2. The SARC 55 Panel concluded that if M is currently 0.4 then it seemed more reasonable to assume that in the short-term M would remain at 0.4 rather than reduce to 0.2. However, a change back to 0.2 is required to rebuild the stock. It is not known when M will change back to 0.2 in the future for the M-ramp formulation so interpretation and development of rebuilding plans using the M-ramp model is more difficult. For informational purposes if F=0, it would take 6 years to rebuild Gulf of Maine cod.

4.1.1.3 Option 3: Rebuilding Plan Review Analysis for Gulf of Maine Cod

If this option is selected it must be selected in conjunction with an above option under 4.1.1.2 Option 2.

Sub-Option A: No Action: Under the current biennial review process, the PDT would use the most recent scientific information available to develop ABC recommendations based on the ABC control rule, the fishing mortality rate necessary to rebuild the stock, guidance from the SSC, and any other available information. In addition to developing ACLs for the upcoming fishing years, the PDT would also recommend other management options necessary to achieve the goals and objectives of the FMP.

Sub-Option B: If this option is adopted, it would establish a rebuilding plan review analysis for use during the new rebuilding period for Gulf of Maine cod. This option is an administrative measure. The review analysis would occur only if three conditions were met: 1) the total ACL for the Gulf of Maine cod stock has not been exceeded during the new rebuilding plan, 2) new information indicates the Gulf of Maine cod stock is below its rebuilding trajectory, and subsequently 3) $F_{rebuild}$ falls below 75% F_{MSY}.

Under these conditions, the Council would task its appropriate body (e.g., Groundfish PDT, SSC) with providing new catch advice options for Gulf of Maine cod to aid decision-making, in priority order, that:

1) Consider extending the rebuilding program to the maximum 10 years if a shorter time frame was initially adopted;
2) Review biomass reference points; and
3) Provide F-rebuild ACLs under 1 and 2 (directly above), in addition to those based on the rebuilding plan adopted in FW51. However since biomass reference points would be reviewed but not necessarily changed, F-rebuild ACLs under 2 (directly above) may also remain unchanged.

Rationale: This measure outlines the administrative steps that would be taken to review the GOM cod rebuilding plan, should the specified conditions be met, in order to investigate why rebuilding has not occurred as expected. These types of analyses would likely already be completed under the current biennial review process, and not necessarily only when the above conditions are met. However, the administrative steps are not explicitly identified in the current biennial review process.

4.1.2 American Plaice Rebuilding Strategy

4.1.2.1 Option 1: No Action

The current rebuilding strategy for American plaice, adopted in Amendment 13, uses a fishing mortality target that is calculated to rebuild the stock by 2014 with a 50 percent probability of success. The stock is unlikely to rebuild by that date in the absence of all fishing mortality, and in 2012, the Council was notified that the current rebuilding strategy had not resulted in adequate progress towards rebuilding. As a result, section 304(e)(3) of the Magnuson-Stevens Act requires that a revised rebuilding program be implemented within 2 years for American plaice. This No Action alternative would not address this Magnuson-Stevens Act requirement. If this option is adopted fishing mortality (set at 75% F_{MSY}) as implemented in FW 50 would be maintained in 2014. However because the stock is not projected to be rebuilt by 2014, fishing mortality would be based on incidental bycatch (i.e.., set as close to zero as possible) starting in 2015.

4.1.2.2 Option 2: Revised Rebuilding Strategy for American Plaice

Three options are being considered for a revised rebuilding strategy for American plaice. All three rebuilding options assume no changes to the FY 2014-2015 ABCs that were previously recommended by the SSC, and adopted by FW 50.

<u>Sub-Option A</u>: The rebuilding strategy would be to rebuild the stock in 7 years with a 50 percent (median) probability of success by 2021. This strategy is the most conservative compared to sub-Options B and C. This strategy is based on a fishing mortality that is above 75%F_{MSY}; $F_{rebuild}$ is not allowed to be initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}).

<u>Sub-Option B</u>: The rebuilding strategy would be to rebuild the stock in 8 years with a 50 percent (median) probability of success by 2022. This strategy is based on a fishing mortality that is above 75%F_{MSY}; $F_{rebuild}$ is not allowed to be initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}).

<u>Sub-Option C</u>: The rebuilding strategy would be to rebuild the stock in 10 years with a 50 percent (median) probability of success by 2024. This strategy is based on a fishing mortality that is above 75%F_{MSY}; $F_{rebuild}$ is not allowed to be initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}).

Rationale: Long-term projections have often proven to be unreliable and tend to be optimistic. There is also considerable uncertainty surrounding $F_{rebuild}$ (and other reference points such as 75%F_{MSY}) estimates due to the estimate's dependence on future recruitment, which is difficult to predict. As a result, basing an ABC on $F_{rebuild}$ is not desirable since it can quickly lead to dramatic reductions in the ABCs. As $F_{rebuild}$ approaches zero, it is less likely to be used for ABC determinations. To avoid the uncertainties associated with $F_{rebuild}$-based ABCs, the rebuilding strategies were designed to prevent $F_{rebuild}$ from being initially limiting (i.e., $F_{rebuild}$ is greater than 75% F_{MSY}). During the rebuilding time period, catch advice would continue to be set consistent with the ABC Control Rule adopted in A16. American plaice requires at least seven years for $F_{rebuild}$ to remain above 75%F_{msy}. $F_{rebuild}$ was estimated to be below F_{MSY} with the maximum 10 year rebuilding plan. This program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary. For informational purposes if F=0, it would take 4 years to rebuild American plaice.

4.1.2.3 Option 3: Rebuilding Plan Review Analysis for American Plaice

If this option is selected it must be selected in conjunction with an above option under 4.1.2.2 Option 2.

<u>Sub-Option A</u>: No Action: Under the current biennial review process, the PDT would use the most recent scientific information available to develop ABC recommendations based on the ABC control rule, the fishing mortality rate necessary to rebuild the stock, guidance from the SSC, and any other available information. In addition to developing ACLs for the upcoming fishing years, the PDT would also recommend other management options necessary to achieve the goals and objectives of the FMP.

Sub-Option B: If this option is adopted, it would establish a rebuilding plan review analysis for use during the new rebuilding period for American plaice. This option is an administrative measure. The review analysis would occur only if three conditions were met: 1) the total ACL for the American plaice stock has not been exceeded during the new rebuilding plan, 2) new information indicates the American plaice stock is below its rebuilding trajectory, and subsequently 3) $F_{rebuild}$ falls below 75% F_{MSY}.

Under these conditions , the Council would task its appropriate body (e.g., Groundfish PDT, SSC) with providing new catch advice options for American plaice to aid decision-making, in priority order, that:

1) Consider extending the rebuilding program to the maximum 10 years if a shorter time frame was initially adopted;
2) Review biomass reference points; and
3) Provide F-rebuild ACLs under 1 and 2 (directly above), in addition to those based on the rebuilding plan adopted in FW51. However since biomass reference points would be reviewed but not necessarily changed, F-rebuild ACLs under 2 (directly above) may also remain unchanged.

Rationale: This measure outlines the administrative steps that would be taken to review the American plaice rebuilding plan, should the specified conditions be met, in order to investigate why rebuilding has not occurred as expected. These types of analyses would likely already be completed under the current biennial review process, and not necessarily only when the above conditions are met. However, the administrative steps are not explicitly identified in the current biennial review process.

4.1.3 Annual Catch Limits

4.1.3.1 Option 1: No Action

If the No Action is selected, the specifications for FY 2014-FY 2015 would remain as adopted by FW 50. For white hake, there would not be any specifications for these years. The FY 2014 - FY 2015 ABCs would be as specified in Table 1.

If this option is selected, there would be no FY 2014 quotas specified for the transboundary Georges Bank stocks, which are managed through the US/CA Resource Sharing Understanding. These quotas are specified annually.

Rationale: Because there would not be any specifications for some stocks under this action, it would not address M-S Act requirements to achieve OY and consider the needs of fishing communities.

Table 1 – No Action/Option 1 Northeast Multispecies OFLs, ABCs, ACLs, and other ACL sub-components for FY 2012 (metric tons, live weight). Values are rounded to the nearest metric ton.

(1) Grayed out values may be adjusted as a result of future recommendations of the TMGC. Values shown for GB haddock and cod are preliminary estimates subject to change.

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components (4)	Scallops	Groundfish Sub-ACL	Comm Groundfish Sub-ACL	Rec Groundfish Sub-ACL	Preliminary Sectors Sub-ACL	Preliminary Non-Sector Groundfish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
GB Cod	2014	3,570	1,960	20	78	0	1,769		0	1,738	31	0	1,867
	2015	4,191	2,506	25	100	0	2,262		0	2,223	39	0	2,387
	2016												
GOM Cod	2014	1,917	1,550	103	51	0		830	486	812	18	0	1,470
	2015	2,639	1,550	103	51	0		830	486	812	18	0	1,470
	2016												
GB Haddock	2014	46,268	19,229	192	769	0	17,171		0	17,116	56	179	18,312
	2015	56,293	43,606	436	1,744	0	38,940		0	38,814	126	406	41,526
	2016												
GOM Haddock	2014	440	341	5	7	0		220	87	218	2	3	323
	2015	561	435	6	9	0		280	111	278	2	4	412
	2016												
GB Yellowtail Flounder	2014												
	2015												
	2016												

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops	Ground-fish Sub-ACL	Comm Ground-fish Sub-ACL	Rec Ground-fish Sub-ACL	Prelim-inary Sectors Sub-ACL	Prelim-inary Non_ Sector Ground-fish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
SNE/MA Yellowtail Flounder	2014	1,042	700	7	28	66	564		0	469	95	0	665
	2015	1,056	700	7	28	64	566		0	471	95	0	665
	2016												
CC/GOM Yellowtail Flounder	2014	936	548	33	11	0	479		0	466	13	0	523
	2015	1,194	548	33	11	0	479		0	466	13	0	523
	2016												
American Plaice	2014	1,981	1,515	30	30	0	1,382		0	1,382	24	0	1,442
	2015	2,021	1,544	31	31	0	1,408		0	1,408	25	0	1,470
	2016												
Witch Flounder	2014	1,512	783	23	117	0	610		0	599	11	0	751
	2015	1,846	783	23	117	0	610		0	599	11	0	751
	2016												
GB Winter Flounder	2014	4,626	3,598	0	108	0	3,385		0	3,364	21	0	3,493
	2015												
	2016												
GOM Winter Flounder	2014	1,458	1,078	272	54	0	714.7		0	688.3	26.4	0	1,040
	2015												
	2016												
SNE/MA Winter Flounder	2014	3,372	1,676	235	168	0	1,210		0	1,074	136	0	1,612
	2015	4,439	1,676	235	168	0	1,210		0	1,074	136	0	1,612
	2016												
Redfish	2014	16,130	11,465	115	229	0	10,565		0	10,523	42	0	10,909
	2015	16,845	11,974	120	239	0	11,034		0	10,990	44	0	11,393
	2016												

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops	Ground-fish Sub-ACL	Comm Ground-fish Sub-ACL	Rec Ground-fish Sub-ACL	Prelim-inary Sectors Sub-ACL	Prelim-inary Non_ Sector Ground fish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
White Hake	2014												
	2015												
	2016												
Pollock	2014	20,554	16,000	960	1,120	0	13,224		0	13,131	93	0	15,304
	2015												
	2016												
N. Window-pane Flounder	2014	202	151	2	44	0	98		0	0	98	0	144
	2015	202	151	2	44	0	98		0	0	98	0	144
	2016												
S. Window-pane Flounder	2014	730	548	55	186	183	102		0	0	102	0	527
	2015	730	548	55	186	183	102		0	0	102	0	527
	2016												
Ocean Pout	2014	313	235	2	21	0	197		0	0	197	0	220
	2015	313	235	2	21	0	197		0	0	197	0	220
	2016												
Atlantic Halibut	2014	180	109	44	5	0	57		0	0	57	0	106
	2015	198	119	48	6	0	62		0	0	62	0	116
	2016												
Atlantic Wolffish	2014	94	70	1	3	0	62		0	0	62	0	65
	2015	94	70	1	3	0	62		0	0	62	0	65
	2016												

4.1.3.2 Option 2: Revised Annual Catch Limit Specifications

If Option 2 is selected, the annual specifications for FY2014 through FY2015, and FY 2014 through FY 2016 for white hake would be as specified in Table 4. For all stocks, except white hake and the transboundary Georges Bank stocks, the specifications included in Table 4 are the values previously adopted in FW 50 and would be the same as those included in the No Action Alternative. Table 5 provides the preliminary common pool incidental catch TACs for Special Management Programs, based on the ACLs provided in Table 4, and Table 6 provides the Closed Area I Hook Gear Haddock SAP.

U.S./Canada TACs

This alternative would specify TACs for the U.S./Canada Management Area for FY 2014 as indicated in Table 2 below. If NMFS determines that FY 2013 catch of GB cod, haddock, or yellowtail flounder from the U.S./Canada Management Area exceeded the respective 2013 TAC, the U.S./Canada Resource Sharing Understanding and the regulations require that the 2014 TAC is reduced by the amount of the overage. Any overage reduction would be applied to the components of the fishery that caused the overage of the U.S. TAC in 2013. In order to minimize any disruption to the fishing industry, NMFS would attempt to make any necessary TAC adjustment in the first quarter of the fishing year.

Table 2 – Proposed FY 2014 U.S./Canada TACs (mt) and Country Shares

TAC	Eastern GB Cod	Eastern GB Haddock	GB Yellowtail Flounder
Total Shared TAC	700 mt	27,000 mt	400 mt (Total ABC)
U.S. TAC	546 mt	10,530 mt	328 mt (US ABC)
Canada TAC	154 mt	16,470 mt	72 mt

A comparison of the proposed FY 2014 U.S. TACs and the FY 2013 U.S. TACs is shown in Table 3. Changes to the U.S. TACs reflect changes to the percentage shares, stock status, and the Transboundary Management Guidance Committee (TMGC) recommendations.

Table 3 – Comparison of the Proposed FY 2014 U.S. TACs and the FY 2013 U.S. TACs (mt)

Stock	U.S. TAC		Percent Change
	FY 2014	FY 2013	
Eastern GB cod	154 mt	96 mt	+ 60%
Eastern GB haddock	10,530 mt	3,952 mt	+166%
GB yellowtail	328 mt	215 mt	+53%

Rationale: This measure would adopt new specifications for groundfish stocks that are consistent with the most recent assessment information. For all stocks, only one alternative to No Action is shown. This is because these catches represent the best scientific information, as determined by the Council's Science and Statistical Committee, and the M-S Act requires that catches not be set higher than these levels.

The U.S. and Canada coordinate management of three stocks that overlap the boundary between the two countries on Georges Bank. Agreement on the amount to be caught is reached each year by the TMGC. This measure considers the recommendations of the TMGC that are consistent with the most recent assessments of those stocks.

Table 4 – Option 2 Northeast Multispecies OFLs, ABCs, ACLs and other ACL sub-components for FY 2014 – FY 2015 (metric tons, live weight). Values are rounded to the nearest metric ton. Sector shares based on 2013 PSCs. Only stocks that are underlined are proposed to be adjusted. Other stocks are provided for informational purposes. Grayed out values will be adjusted as a result of future recommendations of the TMGC.

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components (4)	Scallops	Ground-fish Sub-ACL	Comm Ground-fish Sub-ACL	Rec Ground-fish Sub-ACL	Prelim-inary Sectors Sub-ACL	Prelim-inary Non-Sector Ground-fish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
GB Cod	2014	3,570	1,960	20	78	0	1,769		0	1,738	31	0	1,867
	2015	4,191	2,506	25	100	0	2,262		0	2,223	39	0	2,387
	2016												
GOM Cod	2014	1,917	1,550	103	51	0		830	486	812	18	0	1,470
	2015	2,639	1,550	103	51	0		830	486	812	18	0	1,470
	2016												
GB Haddock	2014	46,268	19,229	192	769	0	17,171		0	17,116	56	179	18,312
	2015	56,293	43,606	436	1,744	0	38,940		0	38,814	126	406	41,526
	2016												
GOM Haddock	2014	440	341	5	7	0		220	87	218	2	3	323
	2015	561	435	6	9	0		280	111	278	2	4	412
	2016												
GB Yellowtail Flounder	2014	unknown	328		6.6	50.9	254.5		0	251.5	3.1	6.1	318.1
	2015												
	2016												

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops	Ground-fish Sub-ACL	Comm Ground-fish Sub-ACL	Rec Ground-fish Sub-ACL	Prelim-inary Sectors Sub-ACL	Prelim-inary Non_ Sector Ground-fish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
SNE/MA Yellowtail Flounder	2014	1,042	700	7	28	66	564		0	469	95	0	665
	2015	1,056	700	7	28	64	566		0	471	95	0	665
	2016												
CC/GOM Yellowtail Flounder	2014	936	548	33	11	0	479		0	466	13	0	523
	2015	1,194	548	33	11	0	479		0	466	13	0	523
	2016												
American Plaice	2014	1,981	1,515	30	30	0	1,382		0	1,357	24	0	1,442
	2015	2,021	1,544	31	31	0	1,408		0	1,383	25	0	1,470
	2016												
Witch Flounder	2014	1,512	783	23	117	0	610		0	599	11	0	751
	2015	1,846	783	23	117	0	610		0	599	11	0	751
	2016												
GB Winter Flounder	2014	4,626	3,598	0	108	0	3,385		0	3,364	21	0	3,493
	2015												
	2016												
GOM Winter Flounder	2014	1,458	1,078	272	54	0	714.7		0	688.3	26.4	0	1,040
	2015												
	2016												
SNE/MA Winter Flounder	2014	3,372	1,676	235	168	0	1,210		0	1,074	136	0	1,612
	2015	4,439	1,676	235	168	0	1,210		0	1,074	136	0	1,612
	2016												
Redfish	2014	16,130	11,465	115	229	0	10,565		0	10,523	42	0	10,909
	2015	16,845	11,974	120	239	0	11,034		0	10,990	44	0	11,393
	2016												

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops	Ground-fish Sub-ACL	Comm Ground-fish Sub-ACL	Rec Ground-fish Sub-ACL	Prelim-inary Sectors Sub-ACL	Prelim-inary Non_ Sector Ground fish Sub-ACL	Small Mesh/ MWT Sub-ACL	Total ACL
White Hake	2014	6,082	4,642	46	93	0	4,278	-	0	4,247	30	0	4,417
	2015	6,237	4,713	47	94	0	4,343		0	4,312	31	0	4,484
	2016	6,314	4,645	46	93	0	4,280		0	4,250	30	0	4,420
Pollock	2014	20,554	16,000	960	1,120	0	13,224		0	13,131	93	0	15,304
	2015												
	2016												
N. Window-pane Flounder	2014	202	151	2	44	0	98		0	0	98	0	144
	2015	202	151	2	44	0	98		0	0	98	0	144
	2016												
S. Window-pane Flounder	2014	730	548	55	186	183	102		0	0	102	0	527
	2015	730	548	55	186	183	102		0	0	102	0	527
	2016												
Ocean Pout	2014	313	235	2	21	0	197		0	0	197	0	220
	2015	313	235	2	21	0	197		0	0	197	0	220
	2016												
Atlantic Halibut	2014	180	109	44	5	0	57		0	0	57	0	106
	2015	198	119	48	6	0	62		0	0	62	0	116
	2016												
Atlantic Wolffish	2014	94	70	1	3	0	62		0	0	62	0	65
	2015	94	70	1	3	0	62		0	0	62	0	65
	2016												

Table 5 – Option 2 Preliminary Common Pool Incidental Catch TACs for Special Management Programs (metric tons, live weight). These values may change as a result of changes in sector membership. White hake is no longer a stock of concern and has been removed.

Stock	Regular B DAS Program		Closed Area I Hook Gear Haddock SAP		Eastern U.S./Canada Haddock SAP	
	2014	2015	2014	2015	2014	2015
GB cod	0.3	0.4	0.1	0.1	0.2	0.3
GOM cod	0.2	0.2				
GB yellowtail flounder	0.03	-			0.03	-
CC/GOM yellowtail flounder	0.1	0.1				
American Plaice	1.2	1.2				
Witch Flounder	0.5	0.5				
SNE/MA winter flounder	1.4	1.4				

Table 6 – FY 2014-2015 CAI Hook Gear Haddock SAP TACs

Year	Exploitable Biomass (thousand mt)	WGB Exploitable Biomass	B(year)/B2004	TAC (mt, live weight)
2014	136,753	47,864	1.752	1,980
2015	169,027	59,159	2.166	2,448

4.2 Commercial and Recreational Fishery Measures

4.2.1 Small-Mesh Fishery Accountability Measures

4.2.1.1 Option 1: No Action

This option would not establish additional accountability measures (AMs) for the small-mesh fishery for Georges Bank (GB) yellowtail flounder under the Multispecies FMP. FW 48 adopted a sub-ACL of GB yellowtail flounder beginning in FY 2013. If the U.S. TAC (equal to the U.S. ABC) for GB yellowtail flounder is exceeded, the U.S./Canada Resource Sharing Understanding requires that the U.S. TAC for the following fishing year be reduced by the amount of the overage. The current regulations specify that this overage deduction would be applied to the component of the fishery that caused the overage. Under this option, if the small-mesh fisheries exceeded their allocation of GB yellowtail flounder, which caused an overage of the U.S. TAC, the small-mesh fishery sub-ACL would be reduced by the amount of the overage the following fishing year. However, because the small-mesh fisheries are prohibited from landing GB yellowtail flounder (discards only), a pound-for-pound reduction of the small-mesh fishery sub-ACL, by itself, may not appropriately correct an overage, or prevent future overages from occurring. Under this option, no corresponding measures would be triggered along with the pound-for-pound payback to constrain GB yellowtail flounder catches by the small-mesh fisheries. If the small-mesh fishery allocation was reduced to zero as a result of an overage payback, or if a quota was not specified for GB yellowtail flounder, there are no restrictions in place under this option that would prevent the small-mesh fisheries from fishing in the Georges Bank yellowtail flounder stock area (statistical areas 522, 525, 561, and 562). Under this option, there would also be no gear modification requirements for the small-mesh fishery in the Georges Bank yellowtail flounder stock area.

4.2.1.2 Option 2: Accountability Measure for the Small-Mesh Fishery Georges Bank Yellowtail Flounder Sub-ACL

Two options (one with two sub-options) are being considered for the small-mesh fishery AM.

<u>Sub-Option A</u>: If the sub-ACL is zero for the small-mesh fishery, or a sub-ACL is not specified, then vessels fishing with bottom otter trawl gear with a cod-end mesh size of less than 5 inches would be prohibited from fishing in the <u>Georges Bank yellowtail flounder stock area</u> (Statistical Areas 522, 525, 561 and 562). Because of the timing of availability of data for this fishery, the AM would be implemented in the fishing year following the notification of the overage.

<u>Sub-Option B1</u>: The AM would be implemented if both the total ACL and the small-mesh fishery sub-ACL for Georges Bank yellowtail flounder are exceeded. The AM would require that vessels fishing with bottom otter trawl gear with a cod-end mesh size of less than 5 inches to use approved selective trawl gear that reduces the catch of Georges Bank yellowtail flounder. Approved gears include the raised footrope trawl, separator trawl, rope trawl, or any other gear authorized by the Council in a management action, or approved for use consistent with the process defined in 50 CFR 648.85 (b)(6). If the AM is implemented, selective trawl gear would be required in the Georges Bank yellowtail flounder stock area (Statistical Areas 522, 525, 561 and 562). The AM would not be implemented in the middle of a fishing year. Should reliable information be available that the total ACL and small-mesh fishery sub-ACL has been exceeded during a fishing year, this AM would be implemented at the start of the next fishing year (Fishing Year 2). However, if the information on an overage for Fishing Year 1 is not available until after the start of Fishing Year 2, then the AM would be implemented at the start of Fishing Year 3. This would be a reactive AM.

<u>Sub-Option B2</u>: The AM would be implemented if the small-mesh fishery sub-ACL of Georges Bank yellowtail flounder is exceeded. The AM would require that vessels fishing with bottom otter trawl gear with a cod-end mesh size of less than 5 inches to use approved selective trawl gear that reduces the catch of Georges Bank yellowtail flounder. Approved gears include the raised footrope trawl, separator trawl, rope trawl, or any other gear authorized by the Council in a management action, or approved by the Regional Administrator through the gear-approval process defined in 50 CFR 648.85 (b)(6). If the AM is implemented, selective trawl gear would be required in the Georges Bank yellowtail flounder stock area (Statistical Areas 522, 525, 561 and 562). The AM would not be implemented in the middle of a fishing year. Should reliable information be available that the total ACL and small-mesh fishery sub-ACL has been exceeded during a fishing year, this AM would be implemented at the start of the next fishing year (Fishing Year 2). However, if the information on an overage for Fishing Year 1 is not available until after the start of Fishing Year 2, then the AM would be implemented at the start of Fishing Year 3. This would be a reactive AM.

4.2.2 Small-Mesh Fishery Measures

4.2.2.1 Option 1: No Action

This option would not change existing pre-trip call-in requirements for small-mesh fisheries. Currently, the long-fin squid fishery (on trips landing more than 2,500 lbs) is required to use the Pre-Trip Notification System (PTNS). Beginning in January 2014, the mackerel fishery (through Amendment 14 to the Squid, Mackerel, and Butterfish Fishery Management Plan) would also be required to make a 48-hr pre-trip notification for all trips landing more than 20,000 lbs of mackerel). However, under this option, no other small-mesh fisheries (e.g., whiting) have any pre-trip notification requirements. Trips that target a mix of stocks (e.g., a mixed trip for whiting and greater than 2,500 lbs of long-fin squid) would be subject to a pre-trip notification requirement.

4.2.2.2 Option 2: Call-in Requirement for Small-Mesh Fisheries

This option would require small-mesh fisheries in the Georges Bank yellowtail flounder stock area (522, 525, 561,or 562) to request an observer prior to leaving the dock for a trip. This option would be in addition to any existing pre-trip call-in requirements for small-mesh fisheries.

Rationale: Small-mesh bottom trawl vessels fishing in the Georges Bank yellowtail flounder stock area would be subject to similar requirements of other fisheries being prosecuted in the same area. Requesting an observer prior to the start of a trip could be accomplished through PTNS. The vessel could not leave the dock until the vessel notified of intent to fish in the GB yellowtail flounder stock area, and received a response as to whether or not an observer would potentially be assigned to the trip.

4.2.3 Management Measures for US/CA TACs

This section considers changing fishery management measures as necessary to adjust catches of US/CA stocks. More than one option can be selected.

4.2.3.1 Option 1: No Action

If this option is adopted, the U.S./Canada TACs would be specified at the beginning of the fishing year, and there would be no in-season adjustments to the U.S./Canada TACs. This option would not consider the quota trading mechanism established by the TMGC and U.S./Canada Steering Committee, and would not allow additional quota to be distributed to the U.S. at the end of the Canadian fishing year (December). Under this option, there would also be no adjustment to the amount of the U.S. TAC for eastern GB haddock that is allocated to the Eastern U.S./Canada Management Area. Eastern GB haddock is a sub-unit of the total GB haddock stock. The amount of the shared U.S./Canada TAC for eastern GB haddock is deducted from the total ABC for GB haddock. Under the current regulations, the U.S. share of eastern GB haddock can only be caught in the eastern U.S./Canada Management Area, and the remaining portion of the total ABC is only available outside of the eastern U.S./Canada Management Area.

4.2.3.2 Option 2: Revised in-season adjustment for US/CA TACs

If this option is adopted, the Regional Administrator would be allowed to adjust the US/CA quotas during the FY, i.e. after allocations were made. Additional quota would be allocated consistent with the current ABC distribution, which would include both groundfish and non-groundfish vessels (i.e., scallops and small-mesh fisheries). The RA would not have the authority to change the allocations to the sub-ACLs during the FY.

Prior to changing measures, the NMFS would consult with the Council and would advise the Council what measures were under consideration.

Rationale: The difference in fishing years between the two countries would require adjustments to occur in adjacent years. This measure would allow an adjustment to occur as soon as possible to the end of the Canadian fishing year, potentially providing additional quota for limiting US/CA stocks.

4.2.3.3 Option 3: Revised in-season adjustment for US/CA TACs

If this option is adopted, the Regional Administrator would be allowed to adjust the US/CA quotas during the FY, i.e. after allocations were made. Additional quota would be distributed consistent with the sector sub-ACL distribution.

Prior to changing measures, the NMFS would consult with the Council and would advise the Council what measures were under consideration.

Rationale: The difference in fishing years between the two countries would require adjustments to occur in adjacent years. This measure would allow an adjustment to occur as soon as possible to the end of the Canadian fishing year, potentially providing additional quota for limiting US/CA stocks. This distribution scheme would consider traded quota as additional groundfish quota that contributes to solely to sector ACE.

4.2.3.4 Option 4: Revised in-season adjustment for US/CA TACs

If this option is adopted, the Regional Administrator would be allowed to make transboundary quota trades of groundfish quota only with components of the fishery trading away their quota. Any groundfish quota resulting from a trade with Canada would go only to the groundfish fishery.

Rationale: This option would ensure that individuals trading quota would directly receive quota in return. Both common pool and sector vessels could be affected by this trade.

4.2.3.5 Option 5: Distribution of US TACs for Eastern/Western Georges Bank Haddock

<u>Sub-Option A</u>: If this option is adopted, the Regional Administrator, in consultation with the Council, would be allowed to adjust the portion of the U.S. TAC for Eastern GB haddock that is available in the Eastern U.S./Canada Area. To the extent possible, changes to the amount of GB haddock available in the Eastern U.S./Canada Area would be made prior to the start of the fishing year, and the Council would provide any recommendation concurrent with its recommendations for U.S./Canada TACs for the upcoming fishing year. Any changes would be adopted consistent with the Administrative Procedures Act. This option does not change how Eastern GB haddock stocks is allocated to sectors, or the requirement that vessels can only harvest Eastern GB haddock allocation from the Eastern U.S./Canada Area, while the remaining allocation may only be harvested outside of the Eastern U.S./Canada Area.

Rationale: GB haddock is a subset of the overall GB haddock stock. The total ABC for GB haddock includes the shared U.S./Canada TAC for the Eastern U.S./Canada Area. Under the current approach, only the amount of the GB haddock ABC remaining after deducting the shared TAC for Eastern GB haddock is available to be caught outside of the Eastern U.S./Canada Area. This reduces operational flexibility for commercial groundfish vessels, and could potentially limit fishing outside of the Eastern U.S./Canada Area even if the total GB haddock ACL has not been fully caught. This measure would help increase the utilization of the GB haddock ACL and improve flexibility for commercial groundfish vessels. Both common pool and sector vessels could be affected.

<u>Sub-Option B</u>: A sector, or state-operated permit bank, may convert its Eastern GB haddock ACE to Western GB haddock ACE at any time during the fishing year, and up to 2 weeks into the following fishing year (unless otherwise instructed by NMFS) to cover any overage during the previous fishing year. The proposed ACE conversion will be referred to, and approved by, NMFS based on general issues, such as whether the applicant is complying with reporting or other administrative requirements, and, based on these factors, would notify the applicant if the conversion is approved or disapproved. The responsibility for ensuring that sufficient ACE is available to cover the conversion is the responsibility of the sector or permit bank. A GB haddock ACE conversion from the Eastern to Western U.S./Canada Area may only be made within a sector or permit bank, and not between sectors or permit banks. Once a portion of Eastern GB haddock ACE has been converted to Western GB haddock ACE by a sector or permit bank, that portion of ACE remains Western GB haddock ACE for the remainder of the fishing year. Western GB ACE may not be transferred to the Eastern US/Canada Area at any time.

Rationale: This measure provides additional flexibility to harvest GB haddock allocation. Eastern GB haddock is a sub-unit of the overall GB haddock stock, and the total ABC for GB haddock includes the shared U.S./Canada TAC for the Eastern U.S./Canada Area. Sectors and state-operated permit banks receive two allocations of GB haddock ACE, an Eastern GB haddock ACE and a Western GB haddock ACE. Currently, Eastern GB haddock ACE can only be harvested in the Eastern U.S./Canada Area, and the remaining portion of a sector's total GB haddock allocation can only be caught in the Western U.S./Canada Area. This caps the amount of GB haddock that a sector can catch in the Eastern Area to ensure that the U.S. does not exceed its TAC for Eastern GB haddock. However, limiting the amount of haddock that could be caught in the Western area may unnecessarily reduce flexibility, and potentially limits fishing in the Western U.S./Canada Area even if a sector has not caught its entire allocation of GB haddock.

This measure does not jeopardize the total ACL for GB haddock, or the Eastern U.S. TAC. This measure does not change any existing sector requirements that a sector must cease operations in a stock area once its ACE is caught until it can acquire additional ACE through a transfer. This measure also does not change the existing ACE transfer provisions. Permit banks would also be allowed the same flexibility, consistent with how the Council has authorized permit banks to transfer ACE.

4.2.4 Georges Bank Yellowtail Flounder Management Measures

4.2.4.1 Option 1: No Action

If this option would be adopted, there would be no changes to the management measures for GB yellowtail flounder for estimating discards. When estimating discards of GB yellowtail flounder for the purposes of groundfish quota monitoring, if this option is adopted there would be one area used as the basis for discard monitoring. This area would match the existing stock boundaries for the stock. Further stratification would only be for sector, gear and mesh.

Rationale: This No Action option would not make any changes to existing measures that address GB yellowtail flounder. The area stratification scheme used for monitoring discards would be consistent with that used in the assessment of this stock.

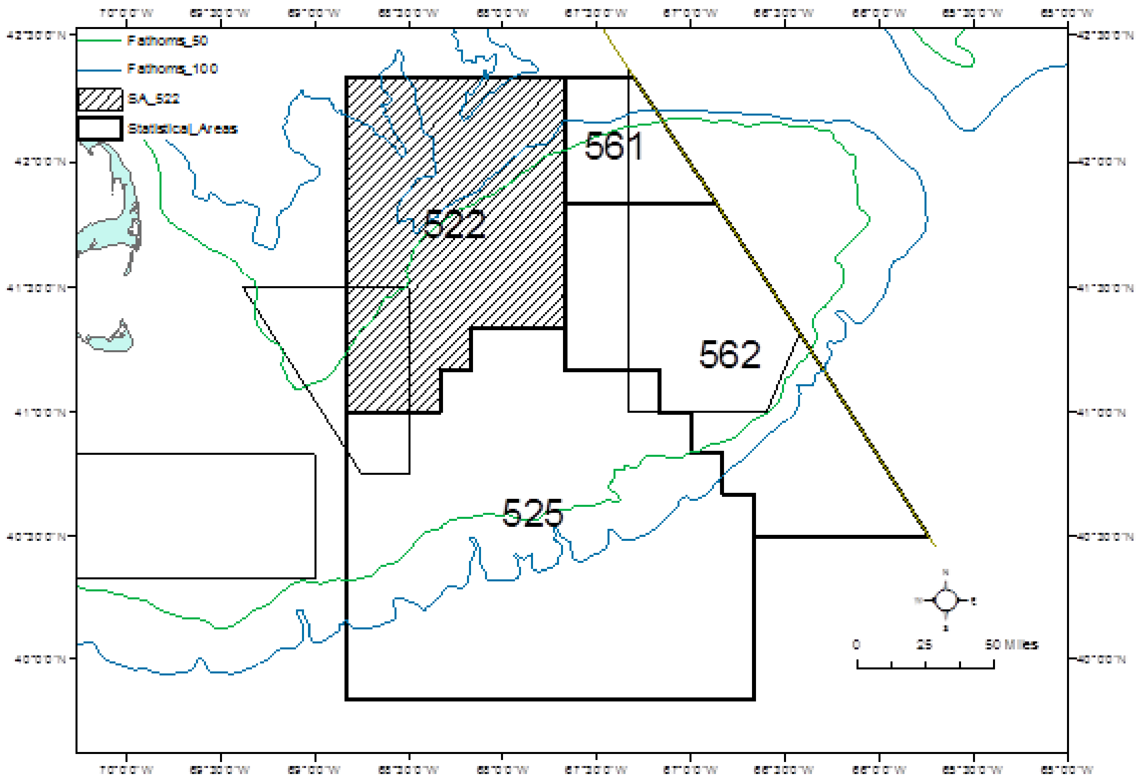
4.2.4.2 Option 2: Revised Discard Strata for GB Yellowtail Flounder

This option would modify the stratification used for estimating discards of GB yellowtail flounder for in-season quota monitoring of sector catches. It would not change the stratification used in assessments, nor would it change the stratification used to monitor common pool fishing trips. If adopted, yellowtail flounder discards on groundfish trips would be calculated for two different areas: statistical area 522 and all other GB yellowtail flounder statistical areas. The areas are shown in Figure 1.

This approach would be used for all groundfish gear. It would not change the stratification method for other groundfish stocks. Yellowtail flounder is primarily caught by trawl gear. If the Regional Administrator determines that this additional stratification is not needed for other, non-trawl gears, then the stratification method can be modified to exclude those gears using procedures consistent with the APA.

Rationale: Yellowtail flounder are primarily caught in the shallower waters of GB. SA 522 includes a large area of deeper water where groundfish vessels target haddock and other species. Catch rates of yellowtail flounder are lower in this area than in the other statistical areas. By treating this as a different discard stratum for yellowtail flounder, the discard rate of GB yellowtail flounder that is applied to unobserved trips will more accurately reflect what occurs in this area, and will not be influenced by fishing activity in the other areas. This should allow more fishing in this area without exceeding allocations of GB yellowtail flounder. This is primarily an issue for trawl vessels, and the Regional Administrator can choose not to apply this approach to other gears if deemed unnecessary. This stratification scheme would not be adopted for common pool fishing trips because the small number of these trips would lead to inadequate trips to estimate an in-season discard rate.

Figure 1 – Proposed Change in Discard Strata for GB Yellowtail Flounder



4.2.5 Prohibition on Possession of Yellowtail Flounder by the Limited Access Scallop Fishery

4.2.5.1 Option 1: No Action

For limited access scallop fishery vessels, there would be no trip limit for yellowtail flounder stocks (GB and SNE/MA) and limited access scallop vessels will be required to land all legal-sized yellowtail flounder that is caught, as established in FW44 to the Groundfish FMP. Note that the retention does not apply to General Category/IFQ vessels.

Rationale: Due to concerns about discarding yellowtail flounder, this option would maintain accountability for catches of this stock and the disincentive to target yellowtail flounder.

4.2.5.2 Option 2: Prohibition on possession of yellowtail flounder

For limited access scallop fishery vessels, there would be zero possession of yellowtail flounder stocks (GB and SNE/MA). Under this option, yellowtail flounder could not be landed or sold by the limited access scallop fishery. This option would not change existing regulations for the General Category/IFQ vessels.

Rationale: Because of expected low quotas for GB yellowtail flounder, creating a prohibition on the possession of yellowtail flounder by the limited access scallop fishery would remove the incentive to target flounders since they could not be retained and sold.

5.0 Alternatives Considered and Rejected

5.1 XXX

5.1.1 Commercial Fishery Restrictions

5.1.1.1 Option 1: No Action

If this action is adopted, there will be no revision to the regulations regarding landings of the allocated regulated groundfish currently managed. The following minimum fish size regulations would apply unless changed in this or a future action.

Table 7 - No Action Minimum Fish Sizes (TL) for Commercial Vessels

Species	Size (inches)
Cod	19 in. (48.3 cm)
Haddock	16 in. (40.6 cm)
Pollock	19 in. (48.3 cm)
Witch Flounder (gray sole)	13 in. (33 cm)
Yellowtail Flounder	12 in. (30.5 cm)
American Plaice (dab)	12 in. (30.5 cm)
Atlantic Halibut	41 in. (104.1 cm)
Winter Flounder (blackback)	12 in. (30.5 cm)
Redfish	7 in. (17.8 cm)

Rationale: Since implementation in 1986, the Northeast Multispecies FMP has used minimum size limits in conjunction with gear requirements to reduce catches of sub-adult fish. When adopted the purpose of this measure was to provide opportunities for fish to spawn before harvest, as well as to reduce the incentive to use illegal mesh to increase catches.

5.1.1.2 Option 2: Full Retention

If this action is adopted all allocated, currently regulated groundfish of all sizes, including cod, haddock, white hake, pollock, Acadian redfish, yellowtail flounder, Georges Bank and Gulf of Maine winter flounder, witch flounder, and American plaice, must be retained by sector vessels, i.e. no discarding of non-prohibited fish. Discarding of non-allocated groundfish species, including those that require no-retention as part of a rebuilding program would continue. Allocated regulated groundfish that are physically damaged, e.g. by predation, must be retained. This action would not alter regulated mesh areas or restrictions on gear and methods of fishing. This measure would not change possession requirements for other species that are regulated by other Fishery Management Plans.

This option would facilitate a reduction in the dependence on the assumed discard rate applied to sector vessels before a calculated discard rate is available. To ensure this option would convert discards to landings, catch accountability should be maximized. This could include one hundred percent dockside monitoring and one hundred percent at-sea monitoring in the form of at-sea monitors and/or electronic monitoring, if electronic monitoring is deemed sufficient.

It should be noted that this change would be made to reduce regulatory discards, not to facilitate targeting of smaller fish. As a result, while sectors would not be prohibited from requesting exemptions from minimum mesh requirements, the expectation is that before such a request would be approved a sector would have to explain why such an exemption would not lead to increased targeting of juvenile groundfish.

Sub-Option A: If this sub-option is adopted it would establish full retention as outlined above on a subset of fishing vessels based on gear type. This program would require one hundred percent dockside monitoring and one hundred percent at-sea monitoring in the form of electronic monitoring and/or at-sea monitors.

Rationale: Electronic monitoring is considered an economical tool to monitor fishing activities but requires testing before broad scale application across gear types. This program would help to evaluate electronic monitoring as a primary tool for observing on a smaller portion of the fleet.

5.2

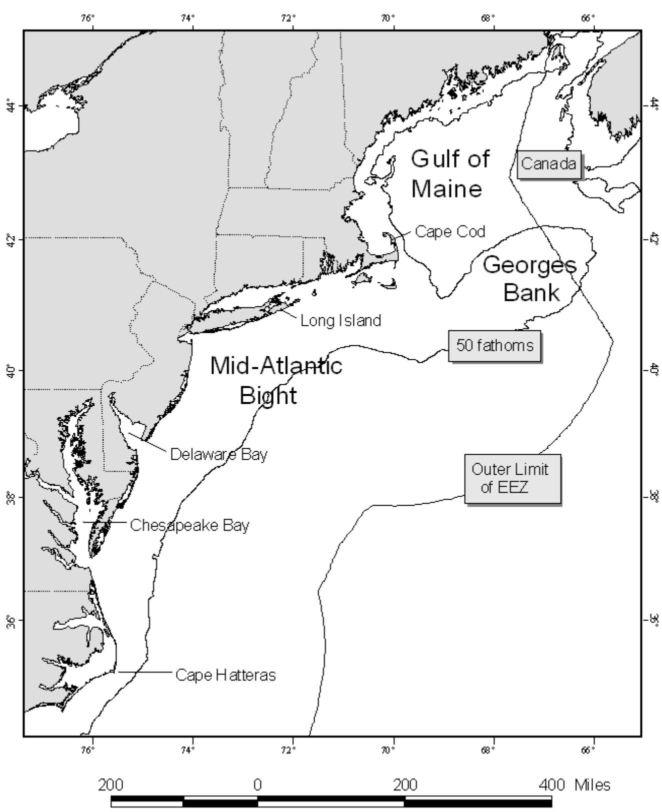
6.0 Affected Environment

The Valued Ecosystem Components (VECs) affected by the Preferred Alternatives include the physical environment, Essential Fish Habitat (EFH), target species, non-target species/bycatch, protected resources, and human communities, which are described below.

6.1 Physical Environment/Habitat/EFH

The Northeast U.S. Shelf Ecosystem (Figure 2) includes the area from the Gulf of Maine south to Cape Hatteras, North Carolina. It extends from the coast seaward to the edge of the continental shelf and offshore to the Gulf Stream (Sherman et al. 1996). The continental slope includes the area seaward of the shelf, out to a depth of 6,562 feet (ft) [2,000 meters (m)]. Four distinct sub-regions comprise the NMFS Northeast Region: the Gulf of Maine, Georges Bank, the southern New England/Mid-Atlantic region, and the continental slope. Sectors primarily fish in the inshore and offshore waters of the Gulf of Maine, Georges Bank, and the southern New England/Mid-Atlantic areas. Therefore, the description of the physical and biological environment focuses on these sub-regions. Information in this section was extracted from Stevenson et al. (2004).

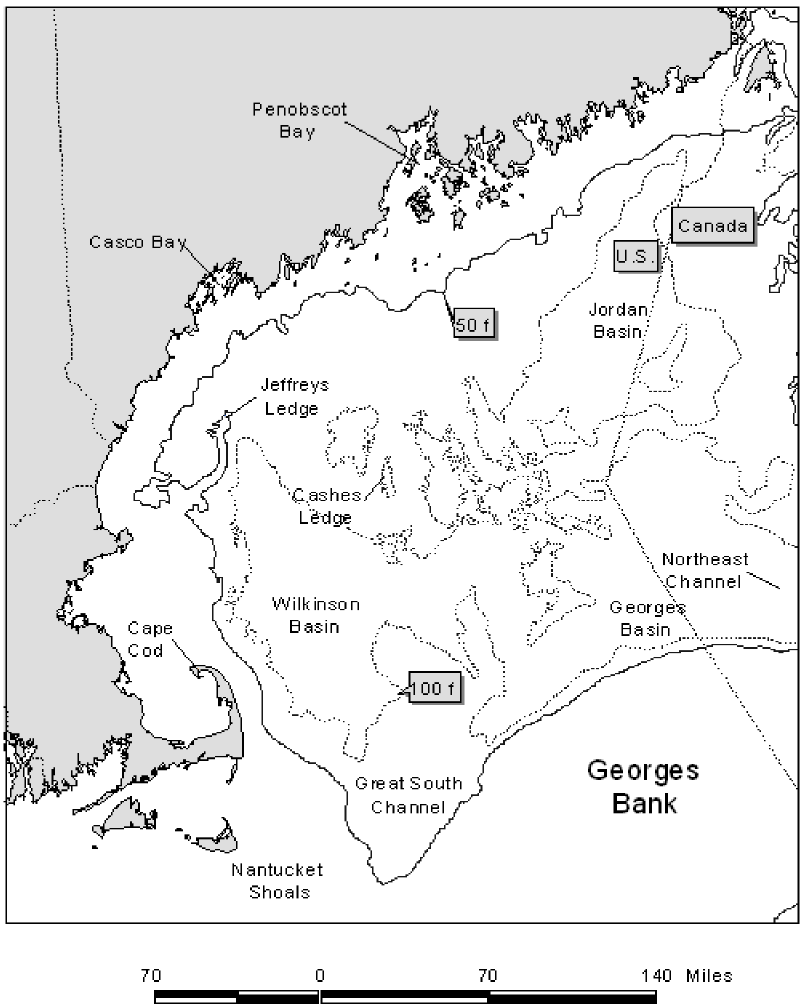
Figure 2 – Northeast U.S. Shelf Ecosystem



6.1.1 Gulf of Maine

The Gulf of Maine is bounded on the east by Browns Bank, on the north by the Nova Scotia (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank (Figure 3). The Gulf of Maine is a boreal environment characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. There are 21 distinct basins separated by ridges, banks, and swells. Depths in the basins exceed 820 ft (250 m), with a maximum depth of 1,148 ft (350 m) in Georges Basin, just north of Georges Bank. High points within the Gulf of Maine include irregular ridges, such as Cashes Ledge, which peaks at 30 ft (9 m) below the surface.

Figure 3 – Gulf of Maine



The Gulf of Maine is an enclosed coastal sea that was glacially derived and is characterized by a system of deep basins, moraines, and rocky protrusions (Stevenson et al. 2004). The Gulf of Maine is topographically diverse from the rest of the continental border of the U.S. Atlantic coast (Stevenson et al. 2004). Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the seafloor of the Gulf of Maine, particularly in its deep basins. These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, sand predominates on some high areas, and gravel,[1] sometimes with boulders, predominates others. Bedrock is the predominant substrate along the western edge of the Gulf of Maine, north of Cape Cod in a narrow band out to a water depth of about 197 ft (60 m). Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Gravel is most abundant at depths of 66 to 131 ft (20 to 40 m), except off eastern Maine where a gravel-covered plain exists to depths of at least 328 ft (100 m). Sandy areas are relatively rare along the inner shelf of the western Gulf of Maine, but are more common south of Casco Bay, especially offshore of sandy beaches.

The geologic features of the Gulf of Maine coupled with the vertical variation in water properties (e.g., salinity, depth, temperature) combine to provide a great diversity of habitat types that support a rich biological community. To illustrate this, a brief description of benthic invertebrates and demersal (i.e., bottom-dwelling) fish that occupy the Gulf of Maine is provided below. Additional information is provided in Stevenson et al. (2004), which is incorporated by reference.

The most common groups of benthic invertebrates in the Gulf of Maine reported by Theroux and Wigley (1998) in terms of numbers collected were annelid worms, bivalve mollusks, and amphipod crustaceans. Bivalves, sea cucumbers, sand dollars, annelids, and sea anemones dominated biomass. Watling (1998) identified seven different bottom assemblages that occur on the following habitat types:

1. Sandy offshore banks: fauna are characteristically sand dwellers with an abundant interstitial component;
2. Rocky offshore ledges: fauna are predominantly sponges, tunicates, bryozoans, hydroids, and other hard bottom dwellers;
3. Shallow [< 197 ft (60 m)] temperate bottoms with mixed substrate: fauna population is rich and diverse, primarily comprised of polychaetes and crustaceans;
4. Primarily fine muds at depths of 197 to 459 ft (60 to 140 m) within cold Gulf of Maine Intermediate Water:[2] fauna are dominated by polychaetes, shrimp, and cerianthid anemones;
5. Cold deep water, muddy bottom: fauna include species with wide temperature tolerances which are sparsely distributed, diversity low, dominated by a few polychaetes, with brittle stars, sea pens, shrimp, and cerianthids also present;
6. Deep basin, muddy bottom, overlaying water usually 45 to 46 °F (7 to 8°C): fauna densities are not high, dominated by brittle stars and sea pens, and sporadically by tube-making amphipods; and
7. Upper slope, mixed sediment of either fine muds or mixture of mud and gravel, water temperatures always greater than 46 °F (8°C): upper slope fauna extending into the Northeast Channel.

[1] The term “gravel,” as used in this analysis, is a collective term that includes granules, pebbles, cobbles, and boulders in order of increasing size. Therefore, the term “gravel” refers to particles larger than sand and generally denotes a variety of “hard bottom” substrates.
[2] Maine Intermediate Water is described as a mid-depth layer of water that preserves winter salinity and temperatures, and is located between more saline Maine bottom water and the warmer, stratified Maine surface water. The stratified surface layer is most pronounced in the deep portions of the western Gulf of Maine.

Two studies (Gabriel 1992, Overholtz and Tyler 1985) reported common[3] demersal fish species by assemblages in the Gulf of Maine and Georges Bank:

- Deepwater/Slope and Canyon: offshore hake, blackbelly rosefish, Gulf stream flounder;
- Intermediate/Combination of Deepwater Gulf of Maine-Georges Bank and Gulf of Maine-Georges Bank Transition: silver hake, red hake, goosefish (monkfish);
- Shallow/Gulf of Maine-Georges Bank Transition Zone: Atlantic cod, haddock, pollock;
- Shallow water Georges Bank-southern New England: yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin;
- Deepwater Gulf of Maine-Georges Bank: white hake, American plaice, witch flounder, thorny skate; and
- Northeast Peak/Gulf of Maine-Georges Bank Transition: Atlantic cod, haddock, pollock.

6.1.2 Georges Bank

Georges Bank is a shallow (10 to 492 ft [3 to 150 m depth]), elongated ((100 miles [mi] (161 kilometer [km] wide) by 20 mi (322 km long)) extension of the continental shelf that was formed during the Wisconsinian glacial episode (Figure 2). It has a steep slope on its northern edge, a broad, flat, gently sloping southern flank, and steep submarine canyons on its eastern and southeastern edges. It has highly productive, well-mixed waters and strong currents. The Great South Channel lies to the west. Natural processes continue to erode and rework the sediments on Georges Bank. Erosion and reworking of sediments by the action of rising sea level as well as tidal and storm currents may reduce the amount of sand and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Bottom topography on eastern Georges Bank consists of linear ridges in the western shoal areas; a relatively smooth, gently dipping seafloor on the deeper, easternmost part; a highly energetic peak in the north with sand ridges up to 30 m high and extensive gravel pavement; and steeper and smoother topography incised by submarine canyons on the southeastern margin. The central region of Georges Bank is shallow, and the bottom has shoals and troughs, with sand dunes superimposed within. The area west of the Great South Channel, known as Nantucket Shoals, is similar in nature to the central region of Georges Bank. Currents in these areas are strongest where water depth is shallower than 164 ft (50 m). Sediments in this region include gravel pavement and mounds, some scattered boulders, sand with storm-generated ripples, and scattered shell and mussel beds. Tidal and storm currents range from moderate to strong, depending upon location and storm activity.

Oceanographic frontal systems separate the water masses of the Gulf of Maine and Georges Bank from oceanic waters south of Georges Bank. These water masses differ in temperature, salinity, nutrient concentration, and planktonic communities. These differences influence productivity and may influence fish abundance and distribution.

Georges Bank has historically had high levels of both primary productivity and fish production. The most common groups of benthic invertebrates on Georges Bank in terms of numbers collected were amphipod crustaceans and annelid worms, while sand dollars and bivalves dominated the overall biomass (Theroux and Wigley 1998). Using the same database, Theroux and Grosslein (1987) identified four macrobenthic invertebrate assemblages that occur on similar habitat type:

[3] Other species were listed as found in these assemblages, but only the species common to both studies are listed.

1. The Western Basin assemblage is found in comparatively deep water (492 to 656 ft [150 to 200 m]) with relatively slow currents and fine bottom sediments of silt, clay, and muddy sand. Fauna are comprised mainly of small burrowing detritivores and deposit feeders, and carnivorous scavengers.
2. The Northeast Peak assemblage is found in variable depths and current strength and includes coarse sediments, consisting mainly of gravel and coarse sand with interspersed boulders, cobbles, and pebbles. Fauna tend to be sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms.
3. The Central Georges Bank assemblage occupies the greatest area, including the central and northern portions of Georges Bank in depths less than 328 ft (100 m). Medium-grained shifting sands predominate this dynamic area of strong currents. Organisms tend to be small to moderately large with burrowing or motile habits. Sand dollars are most characteristic of this assemblage.
4. The Southern Georges Bank assemblage is found on the southern and southwestern flanks at depths from 262 to 656 ft (80 to 200 m), where fine-grained sands and moderate currents predominate. Many southern species exist here at the northern limits of their range. Dominant fauna include amphipods, copepods, euphausiids, and starfish.

Common demersal fish species in Georges Bank are offshore hake, blackbelly rosefish, Gulf Stream flounder, silver hake, red hake, goosefish (monkfish), Atlantic cod, haddock, pollock, yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin, white hake, American plaice, witch flounder, and thorny skate.

6.1.3 Southern New England/Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 2). The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England. It generally includes the area of the continental shelf south of Cape Cod from the Great South Channel to Hudson Canyon. The Mid-Atlantic Bight consists of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The shelf slopes gently from shore out to between 62 to 124 ft (100 and 200 km) offshore where it transforms to the slope (328 to 656 ft [100 to 200 m water depth]) at the shelf break. In both the Mid-Atlantic Bight and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself (Stevenson et al. 2004). Like the rest of the continental shelf, sea level fluctuations during past ice ages largely shaped the topography of the Mid-Atlantic Bight. Since that time, currents and waves have modified this basic structure.

The sediment type covering most of the shelf in the Mid-Atlantic Bight is sand, with some relatively small, localized areas of sand-shell and sand-gravel. Silty sand, silt, and clay predominate on the slope. Permanent sand ridges occur in groups with heights of about 33 ft (10 m), lengths of 6 to 31 mi (10 to 50 km), and spacing of 1 mi (2 km). The sand ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Sand waves are usually found in patches of 5 to 10 with heights of about 7 ft (2 m), lengths of 164 to 328 ft (50 to 100 m), and 0.6 to 1 mi (1 to 2 km) between patches. Sand waves are temporary features that form and re-form in different locations. They usually occur on the inner shelf, especially in areas like Nantucket Shoals where there are strong bottom currents. Because tidal currents southwest of Nantucket Shoals and southeast of Long Island and Rhode Island slow significantly, there is a large mud patch on the seafloor where silts and clays settle out.

Artificial reefs are another important Mid-Atlantic Bight habitat. Artificial reefs formed much more recently on the geologic time scale than other regional habitat types. These localized areas of hard structure have been formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). In general, reefs are important for attachment sites, shelter, and food for many species. In addition, fish predators, such as tunas, may be drawn by prey aggregations or may be behaviorally attracted to the reef structure. Estuarine reefs, such as blue mussel beds or oyster reefs, are dominated by epibenthic organisms, as well as crabs, lobsters, and sea stars. These reefs are hosts to a multitude of fish, including gobies, spot, bass (black sea and striped), perch, toadfish, and croaker. Coastal reefs consist of either exposed rock, wrecks, kelp, or other hard material. Boring mollusks, algae, sponges, anemones, hydroids, and coral generally dominate these coastal reefs. These reef types also host lobsters, crabs, sea stars, and urchins, as well as a multitude of fish, including; black sea bass, pinfish, scup, cunner, red hake, gray triggerfish, black grouper, smooth dogfish, and summer flounder. These epibenthic organisms and fish assemblages are similar to the reefs farther offshore, which generally consist of rocks and boulders, wrecks, and other types of artificial reefs. There is less information available for reefs on the outer shelf, but the fish species associated with these reefs include tilefish, white hake, and conger eel.

In terms of numbers, amphipod crustaceans and bivalve mollusks dominate the benthic inhabitants of this primarily sandy environment. Mollusks (70%) dominate the biomass (Theroux and Wigley 1998). Pratt (1973) identified three broad faunal zones related to water depth and sediment type:

1. The “sand fauna” zone is dominated by polycheates and was defined for sandy sediments (1 percent or less silt) that are at least occasionally disturbed by waves, from shore out to a depth of about 164 ft (50 m).
2. The “silty sand fauna” zone is dominated by amphipods and polychaetes and occurs immediately offshore from the sand fauna zone, in stable sands containing a small amount of silt and organic material.
3. Silts and clays become predominant at the shelf break and line the Hudson Shelf Valley supporting the “silt-clay fauna.”

While substrate is the primary factor influencing demersal species distribution in the Gulf of Maine and Georges Bank, latitude and water depth are the primary influence in the Mid-Atlantic Bight area.

Colvocoresses and Musick (1984) identified the following assemblages in the Mid-Atlantic subregion during spring and fall.[4]

- Northern (boreal) portions: hake (white, silver, red), goosefish (monkfish), longhorn sculpin, winter flounder, little skate, and spiny dogfish;
- Warm temperate portions: black sea bass, summer flounder, butterfish, scup, spotted hake, and northern searobin;
- Water of the inner shelf: windowpane flounder;
- Water of the outer shelf: fourspot flounder; and
- Water of the continental slope: shortnose greeneye, offshore hake, blackbelly rosefish, and white hake.

[4] Other species were listed as found in these assemblages, but only the species common to both spring and fall seasons are listed.

6.1.4 Habitat requirements of groundfish (focus on demersal lifestages)

Habitats provide living things with the basic life requirements of nourishment and shelter. This ultimately provides for both individual and population growth. The quantity and quality of available habitat influences the fishery resources of a region. Depth, temperature, substrate, circulation, salinity, light, dissolved oxygen, and nutrient supply are important parameters of a given habitat. These parameters determine the type and level of resource population that the habitat supports. Table 8 briefly summarizes the habitat requirements for each of the large-mesh groundfish species/stocks managed by the Northeast Multispecies FMP. Information for this table was extracted from the original Northeast Multispecies FMP and profiles available from NMFS. EFH information for egg, juvenile, and adult life stages for these species was compiled from Stevenson et al. 2004 (Table 8). Note that EFH for the egg stage was included for species that have a demersal egg stage (winter flounder and ocean pout); all other species' eggs are found either in the surface waters, throughout the water column, or are retained inside the parent until larvae hatch. The egg habitats of these species are therefore not generally subject to interaction with gear and are not listed in Table 8.

Table 8 – Summary of Geographic Distribution, Food Sources, Essential Fish Habitat Features and Commercial Gear used to Catch Each Species in the Northeast Multispecies Fishery Management Unit

			Essential Fish Habitat		
Species	**Geographic Region of the Northwest Atlantic**	**Food Source**	**Water Depth**	**Substrate**	**Commercial Fishing Gear Used**
Atlantic Cod	Gulf of Maine, Georges Bank and southward	Omnivorous (invertebrates and fish)	(J): 82-245 ft (25-75 m) (A): 33-492 ft (10-150 m)	(J): Cobble or gravel bottom substrates (A): Rocks, pebbles, or gravel bottom substrate	Otter trawl, bottom longlines, gillnets
Haddock	Southwestern Gulf of Maine and shallow waters of Georges Bank	Benthic feeders (amphipods, polychaetes, echinoderms), bivalves, and some fish	(J): 115-328 ft (35-100 m) (A): 131-492 ft (40-150 m)	J): Pebble and gravel bottom substrates (A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches	Otter trawl, bottom longlines, gillnets
Acadian redfish	Gulf of Maine, deep portions of Georges Bank and Great South Channel	Crustaceans	(J): 82-1,312 ft (25-400 m) (A): 164-1,148 ft (50-350 m)	(J): Bottom habitats with a substrate of silt, mud or hard bottom (A): Same as for (J)	Otter trawl
Pollock	Gulf of Maine, extends to Georges Bank, and the northern part of Mid-Atlantic Bight	Juvenile feed on crustaceans, adults also feed on fish and mollusks	(J): 0-820 ft (0-250 m) (A): 49-1,198 ft (5-365 m)	(J): Bottom habitats with aquatic vegetation or substrate of sand, mud or rocks (A): Hard bottom habitats including artificial reefs	Otter trawl, gillnets
Atlantic Halibut	Gulf of Maine, Georges Bank	Juveniles feed on annelid worms and crustaceans, adults mostly feed on fish	(J): 66-197 ft (20-60 m) (A): 328-2,297 ft (100-700 m)	(J): Bottom habitat with a substrate of sand, gravel or clay (A): Same as for (J)	Otter trawl bottom longlines
Ocean Pout	Gulf of Maine, Cape Cod Bay, Georges Bank, Southern New England, Middle Atlantic south to Delaware Bay	Juveniles feed on amphipods and polychaetes. Adults feed mostly on echinoderms as well as on mollusks and	(E): <164 ft (<50 m)	(E): Bottom habitats, generally hard bottom sheltered nests, holes or crevices where juveniles are guarded	Otter trawl

		crustaceans	(L): <164 ft (<50 m) (J): 262 ft (<80 m) (A): 361 ft (<110 m)	(L): Hard bottom nesting areas (J): Bottom habitat, often smooth areas near rocks or algae (A): Bottom habitats; dig depressions in soft sediments	
White hake	Gulf of Maine, Georges Bank, Southern New England	Juveniles feed mostly on polychaetes and crustaceans; adults feed mostly on crustaceans, squids and fish	(J): 16-738 ft (5-225 m) (A): 16-1,066 ft (5-325 m)	(J): Bottom habitat with seagrass beds or substrate of mud or fine-grained sand (A): Bottom habitats with substrate of mud or find grained sand	Otter trawl, gillnets
Yellowtail flounder	Gulf of Maine, Southern New England, Georges Bank	Amphipods and polychaetes	(J): 66-164 ft (20-50 m) (A): 66-164 ft (20-50 m)	(J): Bottom habitats with substrate of sand or sand and mud (A): Same as for (J)	Otter trawl
American plaice	Gulf of Maine, Georges Bank	Polychaetes, crustaceans, mollusks, echinoderms	(J): 148-492 ft (45-150 m) (A): 148-574 ft (45-175 m)	(J): Bottom habitats with fine grained sediments or a substrate of sand or gravel (A): Same as for (J)	Otter trawl
Witch flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/Southern New England	Mostly polychaetes (worms), echinoderms	(J): 164-1,476 ft (50-450 m) (A): 82-984 ft (25-300 m)	(J): Bottom habitats with fine grained substrate (A): Same as for (J)	Otter trawl
Winter flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/Southern New England	Polychaetes, crustaceans	(E): 16 ft (<5 m) (J): 0.3-32 ft (0.1-10 m) (3-164 age 1+) (1-50 m) (A): 3.2-328 ft (1-100 m)	(J): Bottom habitats with a substrate of mud or fine grained sand (A): Bottom habitats including estuaries with substrates of mud, sand, gravel	Otter trawl, gillnets

Atlantic wolffish	Gulf of Maine & Georges Bank	Mollusks, brittle stars, crabs, and sea urchins	(J): 131,2-787.4 ft (40-240 m)	(J): Rocky bottom and coarse sediments	Otter trawl, bottom longlines, and gillnets
			(A): 131.2-787.4 ft (40-240 m)	(A): Same as for (J)	
Windowpane flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/Southern New England	Juveniles mostly crustaceans; adults feed on crustaceans and fish	(J): 3.2-328 ft (1-100 m)	(J): Bottom habitats with substrate of mud or fine grained sand	Otter trawl
			(A): 3.2-574 ft (1-75 m)	(A): Same as for (J)	

6.1.5 Essential Fish Habitat (EFH) Designations

The Sustainable Fisheries Act defines EFH as "[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The proposed action could potentially affect EFH for benthic life stages of species that are managed under the Northeast Multispecies FMP; Atlantic sea scallop; monkfish; deep-sea red crab; northeast skate complex; Atlantic herring; summer flounder, scup, and black sea bass; tilefish; squid, Atlantic mackerel, and butterfish; Atlantic surfclam and ocean quahog FMPs. EFH for the species managed under these FMPs includes a wide variety of benthic habitats in state and Federal waters throughout the Northeast U.S. Shelf Ecosystem. Table 8 summarizes the EFH descriptions of the general substrate or bottom types for all the benthic life stages of the species managed under these FMPs. Full descriptions and maps of EFH for each species and life stage are available on the NMFS Northeast Region website at http://www.nero.noaa.gov/hcd/index2a.htm. In general, EFH for species and life stages that rely on the seafloor for shelter (e.g., from predators), reproduction, or food is vulnerable to disturbance by bottom tending gear. The most vulnerable habitat is more likely to be hard or rough bottom with attached epifauna.

6.1.6 Gear Types and Interaction with Habitat

Groundfish vessels fish for target species with a number of gear types: trawl, gillnet, fish pots/traps, and hook and line gear (including jigs, handline, and non-automated demersal longlines) as part of the FY 2013 operations. This section discusses the characteristics of each of the proposed gear types as well as the typical impacts to the physical habitat associated with each of these gear types.

6.1.6.1 Gear Types

Table 9 - Description of the Gear Types Used by the Multispecies Fishery

	Gear Type Trawl	Sink/ Anchor Gillnets	Bottom Longlines	Hook and Line
Total Length	Varies	295 ft (90 m) long per net	~1,476 ft (451 m)	Varies by target species
Lines	N/A	Leadline and floatline with webbing (mesh) connecting	Mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches (38 cm) long, 3 to 6 inches (8 to 15 cm) apart, and made of shrimp twine	One to several with mechanical line fishing
Nets	Rope or large-mesh size, depends upon target species	Monofilament, mesh size depends on the target species (groundfish nets minimum mesh size of 6.5 inches [16.5 cm])	No nets, but 12/0 circle hooks are required	No nets, but single to multiple hooks, "umbrella rigs"
Anchoring	N/A	22 lbs (10 kg) Danforth-style anchors are required at each end of the net string	20-24 lbs (9-11 kg) anchors, anchored at each end, using pieces of railroad track, sash weights, or Danforth anchors, depending on currents	No anchoring, but sinkers used (stones, lead)
Frequency/ Duration of Use	Tows last for several hours	Frequency of trending changes from daily (when targeting groundfish) to semi-weekly (when targeting monkfish and skate)	Usually set for a few hours at a time	Depends upon cast/target species

6.1.6.1.1 Trawl Gear

Trawls are classified by their function, bag construction, or method of maintaining the mouth opening. Function may be defined by the part of the water column where the trawl operates (e.g., bottom) or by the species that it targets (Hayes 1983). Mid-water trawls are designed to catch pelagic species in the water column and do not normally contact the bottom; however, mid-water trawls are prohibited in the Northeast multispecies fishery. Bottom trawls are designed to be towed along the seafloor and to catch a variety of demersal fish and invertebrate species.

Fishermen use the mid-water trawl to capture pelagic species throughout the water column. The mouth of the net typically ranges from 361 to 558 ft (110 m to 170 m) and requires the use of large vessels (Sainsbury 1996). Successful mid-water trawling requires the effective use of various electronic aids to find the fish and maneuver the vessel while fishing (Sainsbury 1996). Tows typically last for several hours and catches are large. Fishermen usually remove the fish from the net while it remains in the water alongside the vessel by means of a suction pump. Some fishermen remove the fish in the net by repeatedly lifting the codend aboard the vessel until the entire catch is in the hold.

Bottom otter trawls account for nearly all commercial bottom trawling activity. There is a wide range of otter trawl types used in the Northeast due to the diversity of fisheries and bottom types encountered in the region (Northeast Region Essential Fish Habitat Steering Committee 2002). The specific gear design used is often a result of the target species (whether found on or off the bottom) as well as the composition of the bottom (smooth versus rough and soft versus hard). A number of different types of bottom otter trawl used in the Northeast are specifically designed to catch certain species of fish, on specific bottom types, and at particular times of year. Fishermen tow bottom trawls at a variety of speeds, but average about 5.6 km/hour (3 knots). Several federal FMPs manage the use of this gear. Bottom trawling is also subject to a variety of state regulations throughout the region.

A flatfish trawl is a type of bottom otter trawl designed with a low net opening between the headrope and the footrope and more ground rigging on the sweep. This type of trawl is designed so that the sweep follows the contours of the bottom, to get fish like flounders. Flounders lie in contact with the seafloor and flatfish trawls look to get flounder up off the bottom and into the net. It is used on smooth mud and sand bottoms. A high-rise or fly net with larger mesh has a wide net opening and is used to catch demersal fish that tend to rise higher off the bottom than flatfish (Northeast Region Essential Fish Habitat Steering Committee 2002).

Bottom otter trawls are rigged with rockhopper gear for use on "hard" bottom (i.e., gravel or rocky bottom), mud or sand bottom with occasional boulders. This type of gear seeks to sweep over irregularities in the bottom without damaging the net. The sweep in trawls rigged for fishing on smooth bottoms looks to herd fish into the path of the net (Mirarchi 1998).

The raised-footrope trawl was designed to provide vessels with a means of continuing to fish for small-mesh species without catching groundfish. Raised-footrope trawls fish about 1.6 to 2.0 ft (0.5 to 0.6 m) above the bottom (Carr and Milliken 1998). Although the doors of the trawl still ride on the bottom, underwater video and observations in flume tanks have confirmed that the sweep in the raised-footrope trawl has much less contact with the seafloor than the traditional cookie sweep (Carr and Milliken 1998).

The haddock separator trawl and Ruhle trawl (bottom trawls), are used to minimize the catch of cod. The design of these gears considers the behavior of fish in response to gear. A haddock separator trawl is a groundfish trawl modified to a vertically oriented trouser trawl configuration. It has two extensions arranged one over the other. A codend is attached to the upper extension, and the bottom extension is left open with no codend attached. A horizontal large mesh separating panel constructed with a minimum of 6-inch diamond mesh must be installed between the selvedges joining the upper and lower panels [648.85(a)(3)(iii)(A)]. Haddock generally swim to the upper part of a net and cod swim to the lower part of the net. By inserting a mesh panel in the net, and using two codends, the net effectively divides the catch. The cod can escape if the codend on the lower part of the net is left open (NEFMC 2003). Overall, the haddock separator trawl has had mixed results in commercial fishing operations. The expected ratios of haddock to cod have not been realized. Catches of other demersal species, such as flounders, skates, and monkfish, have also been higher than expected. However, the separator trawl has reduced catches of these species compared to normal fishing practices (NEFMC 2009a).

The Ruhle trawl (previously known as the haddock rope trawl or eliminator trawl) is a four-seam bottom groundfish trawl with a rockhopper. It is designed to reduce the bycatch of cod while retaining or increasing the catch of haddock and other healthy stocks [648.85(b)(6)(iv)(J)(*3*)]. NMFS approved the Ruhle trawl for use in the DAS program and in the Eastern U.S./Canada Haddock SAP on July 14, 2008 (73 FR 40186) after nearly two years of testing to determine efficacy. Experiments comparing traditional and the new trawl gear showed that the Ruhle trawl reduced bycatch of cod and flounders, while simultaneously retaining the catch of healthier stocks, primarily haddock. The large, 8-foot mesh in the forward end (the wings) of the Ruhle trawl net allows cod and other fish to escape because of their body shapes and unique behavior around the netting (NOAA 2009).

6.1.6.1.2 Gillnet Gear

Sectors would also use individual sink/anchor gillnets which are about 295 ft (90 m) long. They are usually fished as a series of 5 to 15 nets attached end-to-end. A vast majority of “strings” consist of 10 gillnets.

Gillnets typically have three components: the leadline, webbing, and floatline. In New England, leadlines are approximately 66 lbs/net (30 kilogram (kg)/net). Webs are monofilament, with the mesh size depending on the species of interest. Nets are anchored at each end using materials such as pieces of railroad track, sash weights, or Danforth anchors, depending on currents. Anchors and leadlines have the most contact with the bottom. For New England groundfish, frequency of tending gillnets ranges from daily to semiweekly (Northeast Region Essential Fish Habitat Steering Committee 2002).

A bottom gillnet is a large wall of netting equipped with floats at the top and lead weights along the bottom. Bottom gillnets are anchored or staked in position. Fish are caught while trying to pass through the net mesh. Gillnets are highly selective because the species and sizes of fish caught are dependent on the mesh size of the net. The meshes of individual gillnets are uniform in size and shape, hence highly selective for a particular size of fish (Jennings et al. 2001). Bottom gillnets are fished in two different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets typically catch Atlantic cod, haddock, pollock, and hake and are soaked (duration of time the gear is set) for 12 to 24 hours. Tiedown nets are set with the floatline tied to the leadline at 6-ft (1.8 m) intervals, so that the floatline is close to the bottom and the net forms a limp bag between each tie. They are left in the water for 3-4 days, and are used to catch flounders and monkfish.

6.1.6.1.3 Fish Traps/Pots

Some sectors would use fish traps/pots. This EA assumes these traps/pots are similar to lobster pots. Lobster pots are typically rectangular and consist of two sections, the chamber and the parlor. The chamber has an entrance on both sides of the pot and usually contains the bait. Lobsters enter the parlor via a tunnel (Everhart and Youngs 1981). Escape vents in both areas of the pot minimize the retention of sub-legal sized lobsters (DeAlteris 1998).

Lobster pots are fished as either a single pot per buoy (although two pots per buoy are used in Cape Cod Bay, and three pots per buoy in Maine waters), or a “trawl” or line with up to one hundred pots. The Northeast Fishery Science Center (NEFSC 2002) provides the following important features of lobster pots and their use:

- About 95 percent of lobster pots are made of plastic-coated wire.
- Floating mainlines may be up to 25 ft (8 m) off bottom; sinking groundlines are used where entanglements with marine mammals are a concern.
- Soak time depends on season and location - usually 1 to 3 days in inshore waters in warm weather to weeks in colder waters.
- Offshore pots are larger [more than 4 ft (1 m) long] and heavier (~ 100 lbs or 45 kg), with an average of about 40 pots/trawl and 44 trawls/vessel. They have a floating mainline and are usually deployed for a week at a time.

6.1.6.1.4 Hook and Line Gear

6.1.6.1.4.1 Hand Lines/Rod and Reel

Sectors would also use handlines. The simplest form of hook and line fishing is the hand line. It may be fished using a rod and reel or simply “by hand.” The gear consists of a line, sinker (weight), gangion, and at least one hook. The line is typically stored on a small spool and rack and varies in length. The sinkers vary from stones to cast lead. The hooks can vary from single to multiple arrangements in “umbrella” rigs. Fishermen use an attraction device such as natural bait or an artificial lure with the hook. Handlines can be carried by currents until retrieved or fished in such a manner as to hit bottom and bounce (Stevenson et al.

2004). Fishermen use hand lines as well as rods and reels in the Northeast Region to catch a variety of demersal species.

6.1.6.1.4.2 Mechanized Line Fishing

Mechanized line-hauling systems use electrical or hydraulic power to work the lines on the spools. They allow smaller fishing crews to work more lines. Fishermen mount the reels, also called “bandits,” on the vessel bulwarks with the mainline wound around a spool. They take the line from the spool over a block at the end of a flexible arm. Each line may have a number of branches and baited hooks.

Fishermen use jigging machines to jerk a line with several unbaited hooks up in the water to attract a fish. Fishermen generally use fish jigging machine lines in waters up to 1,970 ft (600 m) deep. Hooks and sinkers can contact the bottom. Depending upon the way the gear is used, it may catch a variety of demersal species.

6.1.6.1.4.3 Bottom Longlines

Sectors would also use bottom longlines. This gear consists of a long length of line to which short lengths of line ("gangions") carrying baited hooks are attached. Longlining is undertaken for a wide range of bottom species. Bottom longlines typically have up to six individual longlines strung together for a total length of more than 1,476 ft (450 m) and are deployed with 20 to 24 lbs (9 to 11 kg) anchors. The mainline is a parachute cord. Gangions are typically 16 in (40 cm) long and 3 to 6 in (1 to 1.8 m) apart and are made of shrimp twine. These bottom longlines are usually set for a few hours at a time (Northeast Region Essential Fish Habitat Steering Committee 2002).

All hooks must be 12/0 circle hooks. A “circle hook is a hook with the point turned back towards the shank. The barbed end of the hook is displaced (offset) relative to the parallel plane of the eyed-end or shank of the hook when laid on its side. Habitat impacts from bottom long lines are negligible.

6.1.6.2 Gear Interaction with Habitat

Commercial fishing in the region has historically used trawls, gillnets, and bottom longline gear. Fishermen have intensively used trawls throughout the region for decades and currently account for the majority of commercial fishing activity in the multispecies fishery off New England.

The most recent Multispecies FMP action to include a comprehensive evaluation of gear effects on habitat was Amendment 13 (NEFMC 2003). Amendment 13 described the general effects of bottom trawls on benthic marine habitats. This analysis primarily used an advisory report prepared for the International Council for the Exploration of the Seas. This report identified a number of possible effects of bottom otter trawls on benthic habitats (International Council for the Exploration of the Seas 2000). The International Council for the Exploration of the Seas report is based on scientific findings summarized in Lindeboom and de Groot (1998). The report focuses on the Irish Sea and North Sea, but assesses effects in other areas. The report generally concluded that: (1) low-energy environments are more affected by bottom trawling; and (2) bottom trawling affects the potential for habitat recovery (i.e., after trawling ceases, benthic communities and habitats may not always return to their original pre- impacted state). The report also concluded the following about direct habitat effects:

- Loss or dispersal of physical features such as peat banks or boulder reefs results in <u>changes that are always permanent</u> and lead to an overall change in habitat diversity. This in turn leads to the local loss of species and species assemblages dependent on such features;

- Loss of structure-forming organisms such as bryozoans, tube-dwelling polychaetes, hydroids, seapens, sponges, mussel beds, and oyster beds results in changes that may be permanent leading to an overall change in habitat diversity. This in turn leads to the local loss of species and species assemblages dependent on such biogenic features;
- Changes are not likely to be permanent due to a reduction in complexity caused by redistributing and mixing of surface sediments and the degradation of habitat and biogenic features, leading to a decrease in the physical patchiness of the seafloor; and
- Changes are not likely to be permanent due to alteration of the detailed physical features of the seafloor by reshaping seabed features such as sand ripples or damaging burrows and associated structures that provide important habitats for smaller animals and can be used by fish to reduce their energy requirements.

The Committee on Ecosystem Effects of Fishing for the National Research Council's Ocean Studies Board (National Research Council 2002) also prepared evaluation of the habitat effects of trawling and dredging that was evaluated during Amendment 13. Trawl gears evaluated included bottom otter trawls. This report identified four general conclusions regarding the types of habitat modifications caused by trawls:

- Trawling reduces habitat complexity;
- Repeated trawling results in discernible changes in benthic communities;
- Bottom trawling reduces the productivity of benthic habitats; and
- Fauna that live in low natural disturbance regimes are generally more vulnerable to fishing gear disturbance.

The report from a "Workshop on the Effects of Fishing Gear on Marine Habitats off the Northeastern U.S." sponsored by the NEFMC and Mid-Atlantic Fishery Management Council (MAFMC) (NEFSC 2002) provides additional information for various Northeast region gear types. A panel of fishing industry members and experts in the fields of benthic ecology, fishery ecology, geology, and fishing gear technology convened for the purpose of assisting the NEFMC, MAFMC, and NMFS with:

- Evaluating the existing scientific research on the effects of fishing gear on benthic habitats;
- Determining the degree of impact from various gear types on benthic habitats in the Northeast;
- Specifying the type of evidence that is available to support the conclusions made about the degree of impact;
- Ranking the relative importance of gear impacts to various habitat types; and
- Providing recommendations on measures to minimize those adverse impacts.

The panel was provided with a summary of available research studies that summarized information relating to the effects of bottom otter trawls, bottom gillnets, and bottom longlines. Relying on this information plus professional judgment, the panel identified the effects and the degree of impact of these gears on mud, sand, and gravel/rock habitats.

The panel's report provides additional information on the recovery times for each type of impact for each gear type in mud, sand, and gravel habitats ("gravel" includes other hard-bottom habitats). This information made it possible for the panel to rank these three substrates in terms of their vulnerability to the effects of bottom trawling. The report also notes that other factors such as frequency of disturbance from fishing and from natural events are also important. In general, the panel determined that impacts from trawling are greater in gravel/rock habitats with attached epifauna. The panel ranked impacts to biological structure higher than impacts to physical structure. Effects of trawls on major physical features in mud (deep water clay-bottom habitats) and gravel bottom were described as permanent. Impacts to biological and physical structure were given recovery times of months to years in mud and gravel. Impacts of trawling on physical structure in sand were of shorter duration (days to months) given the exposure of most continental shelf sand habitats to strong bottom currents and/or frequent storms.

According to the panel, impacts of sink gillnets and bottom longlines on sand and gravel habitats would result in low degree impacts (NEFSC 2002). Duration of impacts to physical structures from these gear types would be expected to last days to months on soft mud, but could be permanent on hard bottom clay structures along the continental slope. Impacts to mud would be caused by gillnet lead lines and anchors. Physical habitat impacts from sink gillnets and bottom longlines on sand would not be expected.

Amendment 13 also summarized the contents of a second expert panel report, produced by the Pew Charitable Trusts and entitled “Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters” (Morgan and Chuenpagdee 2003). This group evaluated the habitat effects of 10 different commercial fishing gears used in U.S. waters. The report concluded that bottom trawls have relatively high habitat impacts; bottom gillnets and pots and traps have low to medium impacts; and bottom longlines have low impacts. As in the International Council for the Exploration of the Seas and National Research Council reports, the panel did not evaluate individual types of trawls and dredges. The impacts of bottom gillnets, traps, and bottom longlines were limited to warm or shallow water environments with rooted aquatic vegetation or “live bottom” environments (e.g., coral reefs).

Going beyond Amendment 13 analyses, one purpose of the ongoing Omnibus Essential Fish Habitat Amendment 2 (OA2) is to evaluate existing habitat management areas and develop new habitat management areas. To assist with this effort, the Habitat PDT developed an analytical approach to characterize and map habitats and to assess the extent to which different habitat types are vulnerable to different types of fishing activities. This body of work, termed the Swept Area Seabed Impact approach, includes a quantitative, spatially-referenced model that overlays fishing activities on habitat through time to estimate both potential and realized adverse effects to EFH. The approach is detailed in this document, available on the Council webpage: http://www.nefmc.org/habitat/sasi_info/110121_SASI_Document.pdf.

The spatial domain of the SASI model is US Federal waters (between 3-200 nm offshore) from Cape Hatteras to the US-Canada border. Within this region, habitats were defined based on natural disturbance regime and dominant substrate. Understanding natural disturbance regime is important because it may mask or interact with human-caused disturbance. Energy at the seabed was inferred from an oceanography model (flow) and a coastal relief model (depth) and was binned into areas of high or low energy. Substrate type is an important determinant of habitat because it influences the distribution of managed species, structure-forming epifauna, and prey species by providing spatially discrete resources such as media for burrowing organisms, attachment points for vertical epifauna, etc. The dominant substrate map was composed of thousands of visual and grab sample observations, with grid size based on the spacing of the observations. The underlying spatial resolution of the substrate grid is much higher on Georges Bank and on the tops of banks and ledges in the Gulf of Maine than it is in deeper waters. For this reason, additional data sources were used during habitat management area development.

One of the outputs of the model is habitat vulnerability, which is related in part to the characteristics of the habitat itself, and part to the quality of the impact. Because of a general need for attachment sites, epifauna that provided a sheltering function for managed species tend to be more diverse and abundant in habitats containing larger grain sized substrates. Structurally complex and/or long-lived epifaunal species are more susceptible to gear damage and slower to recover. Recovery rates were assumed to be retarded in low energy areas, such that overall vulnerability (susceptibility + recovery) of low energy areas is greater than high energy areas, other factors being equal. When combined with the underlying substrate and energy distribution, the susceptibility and recovery scores assigned to the inferred mix of epifaunal and geological features generated a highly patchy vulnerability map. Locations where high proportions by area map out as cobble-dominated or cobble- and boulder-dominated tended to show higher vulnerability scores. Although the literature on fixed gear impacts is relatively sparse, it was estimated that mobile gears have a greater per-unit area swept impact than fixed gears, so mobile gear vulnerability scores are the focus here in the exemption area analyses below.

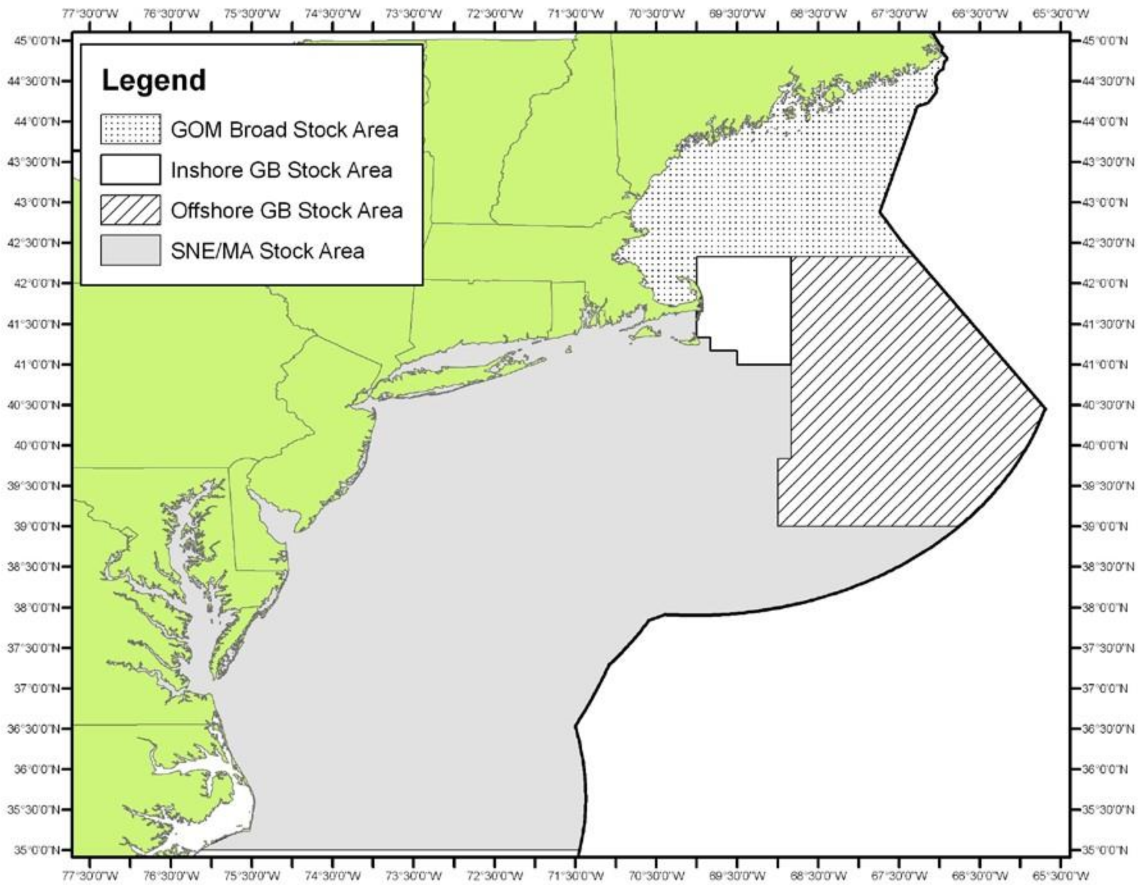
6.2 Groundfish Species

This section describes the life history and stock population status for each allocated fish stock the sectors harvest under the Northeast Multispecies FMP. Figure 16 identifies the four broad stock areas used in the fishery. Please refer to the species habitat associations described in Section 4.2 for information on the interactions between gear and species. Section 6.1 also provides a comparison of depth-related demersal fish assemblages of Georges Bank and the Gulf of Maine. This section concludes with an analysis of the interaction between the gear types the sectors intend to use (as described in Section 6.1.6.1) and allocated target species. The following discussions have been adapted from the GARM III report (NEFSC 2008) and the EFH Source Documents: Life History and Habitat Characteristics are assessable via the NEFSC website at http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

6.2.1 Species and Stock Status Descriptions

The allocated target stocks for the sectors are GOM Cod, GB Cod, GOM Haddock, GB Haddock, American Plaice, Witch Flounder, GOM Winter Flounder, GB Winter Flounder, Cape Cod/GOM Yellowtail Flounder, GB Yellowtail Flounder, SNE/MA Yellowtail Flounder, Redfish, Pollock and White Hake.

Figure 4 - Broad stock areas as defined in Amendment 16



Spiny dogfish, skates, and monkfish are considered in this EA as "non-allocated target species and bycatch" in Sections 6.3 and 5.1. The Northeast Multispecies FMP does not allocate these species. They and are managed under their own FMPs.

The Northeast Multispecies FMP also manages Atlantic halibut, ocean pout, windowpane flounder, and SNE/MA winter flounder. However, sectors do not receive an allocation of these species. Sector and common pool vessels cannot land wolffish, ocean pout, windowpane flounder, and inshore GB and SNE/MA winter flounder, but can retain one halibut per trip. Wolffish are provisionally managed under the Northeast Multispecies FMP Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a) addresses these species. These species are discussed in Section 6.3.

6.2.1.1 Gulf of Maine Cod

Life History: The Atlantic cod, *Gadus morhua*, is a demersal gadoid species found on both sides of the North Atlantic. In the western North Atlantic, cod occur from Greenland to North Carolina. In U.S. waters, cod are assessed and managed as two stocks: Gulf of Maine and Georges Bank. GOM cod attain sexual maturity at a later age than GB cod due to differences in growth rates between the two stocks. The greatest concentrations of cod off the Northeast coast of the U.S. are on rough bottoms in waters between 33 and 492 ft (10 and 150 m) and at temperatures between 32 and 50°F (0 and 10°C). Spawning occurs year-round, near the ocean bottom, with a peak in winter and spring. Peak spawning corresponds to water temperatures between 41 and 45°F (5 and 7°C). It is delayed until spring when winters are severe and peaks in winter when mild. Eggs are pelagic, buoyant, spherical, and transparent. They drift for 2 to 3 weeks before hatching. The larvae are pelagic for about three months until reaching 1.6 to 2.3 in (4 to 6 cm), at which point they descend to the seafloor. Most remain on the bottom after this descent, and there is no evidence of a subsequent diel, vertical migration. Adults tend to move in schools, usually near the bottom, but also occur in the water column.

Population Status: The inshore GOM stock appears to be relatively distinct from the offshore cod stocks on the banks of the Scotian Shelf and Georges Bank based on tagging studies. GOM cod spawning stock biomass has increased since the late 1990's from 12,236 ton (11,100 metric tons [mt]) in 1997 to 37,479 ton (34,000 mt) in 2007. However, the stock remains low relative to historic levels and is subject to a formal stock rebuilding plan. The 2010 biomass estimate, the most recent estimate available, was 8 percent of the biomass rebuilding target. Currently, the GOM cod stock is overfished and overfishing is occurring.

6.2.1.2 Georges Bank Cod

Life History: The GB cod stock, *Gadus morhua*, is the most southerly cod stock in the world. The greatest concentrations off the Northeast coast of the U.S. are on rough bottoms in waters between 33 and 492 ft (10 and 150 m) and at temperatures between 32 and 50° F (0 and 10°C). Spawning occurs year-round, near the ocean bottom, with a peak in winter and spring. Peak spawning corresponds to water temperatures between 41 and 45°F (5 and 7°C). It is delayed until spring when winters are severe and peaks in winter when mild. Eggs are pelagic, buoyant, spherical, and transparent. They drift for 2 to 3 weeks before hatching. The larvae are pelagic for about 3 months until reaching 1.6 to 2.3 in (4 to 6 cm), at which point they descend to the seafloor. Most remain on the bottom after this descent, and there is no evidence of a subsequent diel, vertical migration. Adults tend to move in schools, usually near the bottom, but also occur in the water column.

Population Status: GB cod are a transboundary stock harvested by both the U.S. and Canadian fishing fleets. The GB cod stock is overfished and overfishing is occurring.

6.2.1.3 Gulf of Maine Haddock

Life History: The GOM haddock, *Melanogrammus aeglefinus*, is a commercially-exploited groundfish found in the North Atlantic Ocean. This demersal gadoid species occurs from Cape May, New Jersey to the Strait of Belle Isle, Newfoundland in the western North Atlantic. A total of six distinct haddock stocks have been identified. Two of these haddock stocks occur in U.S. waters associated with Georges Bank and the Gulf of Maine.

Haddock are highly fecund broadcast spawners. They spawn over various substrates including rocks, gravel, smooth sand, and mud. Haddock release their eggs near the ocean bottom in batches where a courting male then fertilizes them. After fertilization, haddock eggs become buoyant and rise to the surface water layer. In the Gulf of Maine, spawning occurs from early February to May, usually peaking in February to April. Jeffreys Ledge and Stellwagen Bank are the two primary spawning sites in the Gulf of Maine. Fertilized eggs are buoyant and remain in the water column where subsequent development occurs. Larvae metamorphose into juveniles in roughly 30 to 42 days at lengths of 0.8 to 1.1 in (2 to 3 cm). Small juveniles initially live and feed in the epipelagic zone. Juveniles remain in the upper part of the water column for 3 to 5 months. Juveniles visit the ocean bottom in search of food. Juveniles settle into a demersal existence once they locate suitable bottom habitat. Haddock do not make extensive seasonal migrations. Haddock prefer deeper waters in the winter and tend to move shoreward in summer.

Population Status: The GOM haddock stock is not overfished but overfishing is occurring. The stock size has been decreasing and is approaching an overfished condition. Should the stock size drop below the minimum stock size threshold, a formal stock rebuilding program would need to be put in place.

6.2.1.4 Georges Bank Haddock

Life History: The general life history of GB haddock, *Melanogrammus aeglefinus*, is comparable to the GOM haddock as described above. On Georges Bank, spawning occurs from January to June, usually peaking from February to early-April. Georges Bank is the principal haddock spawning area in the Northeast U.S. Shelf Ecosystem. GB haddock spawning concentrates on the northeast peak of Georges Bank.

Median age and size of maturity differ slightly between the GB and GOM haddock stocks. GARM III found that the GOM fishery does not target haddock. The fleet targets mostly flatfish using large square (6.5 inch [16.5 cm]) mesh gear. This leads to reduced selectivity on haddock. The GOM haddock have lower weights at age than the GB stock and the age at 50 percent maturity was also lower for GOM haddock than GB haddock.

Population Status: The GB haddock stock is a transboundary resource co-managed with Canada. Substantial declines have recently occurred in the weights at age due to slower than average growth. This was particularly true of the 2003 year-class. This decline is affecting productivity in the short-term. The growth of subsequent year-classes is returning to the earlier rates. The stock is not overfished and overfishing is not occurring. The fishing mortality rate for this stock has been low in recent years.

6.2.1.5 American Plaice

Life History: The American plaice, *Hippoglossoides platessoides*, is an arctic-boreal to temperate-marine pleuronectid (righteye) flounder that inhabits both sides of the North Atlantic on the continental shelves of northeastern North America and northern Europe. Off the U.S. coast, American plaice are managed as a single stock in the Gulf of Maine-Georges Bank region. American plaice are batch spawners. They release eggs in batches every few days over the spawning period. Adults spawn and fertilize their eggs at or near the bottom. Buoyant eggs lack oil globules and will drift into the upper water column after release. Eggs hatch at the surface and the amount of time between fertilization and hatching varies with the water temperature. Transformation of the larvae and migration of the left eye begins when the larvae are approximately 0.8 in (20 millimeters (mm)). Dramatic physiological transformations occur during the juvenile stage. The body shape continues to change, flattening and increasing in depth from side to side. As the migration of the left eye across the top of the head to the right side reaches completion, descent towards the seafloor begins. In U.S. and Canadian waters, American plaice is a sedentary species migrating only for spawning and feeding.

Population Status: In the Gulf of Maine and Georges Bank area, the American plaice stock is not overfished and overfishing is not occurring. However, a stock assessment conducted in 2012 indicates that the stock will not rebuild by 2014, the currently specified rebuilding target date, even if no fishing is allowed on the stock in FY 2013. Because of this inadequate rebuilding progress, a revised rebuilding program is necessary and will be developed for use no later than May 1, 2014.

6.2.1.6 Witch Flounder

Life History: The witch flounder, *Glyptocephalus cynoglossus*, is a demersal flatfish distributed on both sides of the North Atlantic. In the western North Atlantic, the species ranges from Labrador southward, and closely associates with mud or sand-mud bottom. In U.S. waters, witch flounder are common throughout the Gulf of Maine, in deeper areas on and adjacent to Georges Bank, and along the shelf edge as far south as Cape Hatteras, North Carolina. NMFS manages witch flounder as a unit stock.

Spawning occurs at or near the bottom; however, the buoyant eggs rise into the water column where subsequent egg and larval development occurs. The pelagic stage of witch flounder is the longest among the species of the family *Pleuronectidae*. Descent to the bottom occurs when metamorphosis is complete, at 4 to 12 months of age. There has been a decrease in both the age and size of sexual maturity in recent years. Witch flounder spawn from March to November, with peak spawning occurring in summer. The general trend is for spawning to occur progressively later from south to north. In the Gulf of Maine-Georges Bank region, spawning occurs from April to November, and peaks from May to August. Spawning occurs in dense aggregations that are associated with areas of cold water. Witch flounder spawn at 32 and 50 °F (0 to 10°C).

Population Status: Witch flounder are overfished and overfishing is occurring.

6.2.1.7 Gulf of Maine Winter Flounder

Life History: The winter flounder, *Psuedopleuronectes americanus*, is a demersal flatfish distributed in the western North Atlantic from Labrador to Georgia. Important U.S. commercial and recreational fisheries exist from the Gulf of Maine to the Mid-Atlantic Bight. NMFS manages and assesses winter flounder in U.S. waters as three stocks: Gulf of Maine, southern New England/Mid-Atlantic, and Georges Bank. Adult GOM winter flounder migrate inshore in the fall and early winter and spawn in late winter and early spring. Winter flounder spawn from winter through spring, with peak spawning occurring in Massachusetts Bay and south of Cape Cod during February and March, and somewhat later along the coast of Maine, continuing into May. After spawning, adults typically leave inshore areas when water temperatures exceed 59 °F (15°C) although some remain inshore year-round. The eggs of winter flounder are demersal, adhesive, and stick together in clusters. Larvae are initially planktonic but become increasingly bottom-oriented as metamorphosis approaches. Metamorphosis is when the left eye migrates to the right side of the body and the larvae become “flounder-like”. It begins around 5 to 6 weeks after hatching, and finishes by the time the larvae are 0.3 to 0.4 in (8 to 9 mm) in length at about 8 weeks after water where individuals may grow to about 4 in (100 mm) within the first year.

Population Status: The exact status determination for GOM winter flounder is unknown. Overfishing is not occurring.

6.2.1.8 Georges Bank Winter Flounder

Life History: The life history of the GB winter flounder**,** *Psuedopleuronectes americanus*, is comparable to the GOM winter flounder life history described above.

Population Status: The stock is not overfished and not undergoing overfishing.

6.2.1.9 Cape Cod/Gulf of Maine Yellowtail Flounder

Life History: The yellowtail flounder, *Limanda ferruginea*, is a demersal flatfish that occurs from Labrador to Chesapeake Bay. It generally inhabits depths between 131 to 230 ft (40 and 70 m). NMFS manages three stocks off the U.S. coast including the Cape Cod/GOM, GB, and SNE/MA stocks. Spawning occurs in the western North Atlantic from March through August at temperatures of 41 to 54 °F (5 to 12°C). Spawning takes place along continental shelf waters northwest of Cape Cod. Yellowtail flounder spawn buoyant, spherical, pelagic eggs that lack an oil globule. Pelagic larvae are brief residents in the water column with transformation to the juvenile stage occurring at 0.5 to 0.6 in (11.6 to 16 mm) standard length. There are high concentrations of adults around Cape Cod in both spring and autumn. The median age at maturity for females is 2.6 years off Cape Cod.

Population Status: The Cape Cod/GOM yellowtail flounder stock continues to be overfished and overfishing is continuing. However, fishing mortality has been declining since 2004 and was at the lowest level observed in the time series in 2009. Spawning stock biomass has increased the past few years.

6.2.1.10 Georges Bank Yellowtail Flounder

Life History: The general life history of the GB yellowtail flounder, *Limanda ferruginea,* is comparable to the Cape Cod/GOM yellowtail described above. The median age at maturity for females is 1.8 years on Georges Bank. Spawning takes place along continental shelf waters of Georges Bank.

Population Status: GB yellowtail flounder is overfished, and overfishing is occurring.

6.2.1.11 Southern New England/Mid-Atlantic Yellowtail Flounder

Life History: The general life history of the SNE/MA yellowtail flounder, *Limanda ferruginea,* is comparable to the Cape Cod/GOM yellowtail described above. The median age at maturity for females is 1.6 years off southern New England.

Population Status: Based on a 2012 assessment, the SNE/MA yellowtail flounder stock is not overfished, not subject to overfishing, and is rebuilt. The assessment concluded that the stock is less productive than previously believed and, as a result, the overall biomass at recently seen low levels represents the rebuilt state of nature for the stock.

6.2.1.12 Redfish

Life History: The Acadian redfish, *Sebastes fasciatus* Storer, and the deepwater redfish, *S. mentella* Travin, are virtually indistinguishable from each other based on external characteristics. Deepwater redfish are less prominent in the more southerly regions of the Scotian Shelf and appear to be virtually absent from the Gulf of Maine. Conversely, Acadian redfish appear to be the sole representative of the genus Sebastes. NMFS manages Acadian redfish inhabiting the U.S. waters of the Gulf of Maine and deeper portions of Georges Bank and the Great South Channel as a unit stock.

The redfish are a slow growing, long-lived, ovoviviparous species with an extremely low natural mortality rate. Redfish fertilize their eggs internally. The eggs develop into larvae within the oviduct, and are released near the end of the yolk sac phase. The release of larvae lasts for 3 to 4 months with a peak in late May to early June. Newly spawned larvae occur in the upper 10 m of the water column; at 0.4 to 1.0 in (10 to 25 mm). The post-larvae descend below the thermocline when about 1 in (25 mm) in length. Young-of-the-year are pelagic until reaching 1.6 to 2.0 in (40 to 50 mm) at 4 to 5 months old. Therefore, young-of-the-year typically move to the bottom by early fall of their first year. Redfish of 9 in (22 cm) or greater are considered adults. In general, the size of landed redfish positively correlates with depth. This may be due to a combination of differential growth rates of stocks, confused species identification (deepwater redfish are a larger species), size-specific migration, or gender-specific migration (females are larger). Redfish make diurnal vertical migrations linked to their primary euphausiid prey. Nothing is known about redfish breeding behavior. However, redfish fertilization is internal and fecundity is relatively low.

Population Status: The redfish stock is not overfished and overfishing is not occurring.

6.2.1.13 Pollock

Life History: Pollock, *Pollachius virens*, occur on both sides of the North Atlantic. In the western North Atlantic, the species is most abundant on the western Scotian Shelf and in the Gulf of Maine. There is considerable movement of pollock between the Scotian Shelf, Georges Bank, and the Gulf of Maine. Although some differences in meristic and morphometric characters exist, there are no significant genetic differences among areas. As a result, pollock are assessed as a single unit. The principal pollock spawning sites in the western North Atlantic are in the western Gulf of Maine, Great South Channel, Georges Bank, and on the Scotian Shelf. Spawning takes place from September to April. Spawning time is more variable in northern sites than in southern sites. Spawning occurs over hard, stony, or rocky bottom. Spawning activity begins when the water column cools to near 46 °F (8°C) and peaks when temperatures are approximately 40 to 43 °F (4.5 to 6°C). Thus, most spawning occurs within a comparatively narrow range of temperatures.

Pollock eggs are buoyant and rise into the water column after fertilization. The pelagic larval stage lasts for 3 to 4 months. At this time the small juveniles or "harbor pollock" migrate inshore to inhabit rocky subtidal and intertidal zones. Pollock then undergo a series of inshore-offshore movements linked to temperature until near the end of their second year. At this point, the juveniles move offshore where the pollock remain throughout the adult stage. Pollock are a schooling species and occur throughout the water column. With the exception of short migrations due to temperature changes and north-south movements for spawning, adult pollock are fairly stationary in the Gulf of Maine and along the Nova Scotian coast. Male pollock reach sexual maturity at a larger size and older age than females. Age and size at maturity of pollock have declined in recent years. This similar trend has also been reported in other marine fish species such as haddock and witch flounder.

Population Status: The pollock stock is not subject to overfishing, is not overfished, and was declared rebuilt in 2010.

6.2.1.14 White Hake

Life History: The white hake, *Urophycis tenuis*, occurs from Newfoundland to southern New England and is common on muddy bottom throughout the Gulf of Maine. The depth distribution of white hake varies by age and season. Juvenile white hake typically occupy shallower areas than adults, but individuals of all ages tend to move inshore or shoalward in summer and disperse to deeper areas in winter. The northern spawning group of white hake spawns in late summer (August-September) in the southern Gulf of St. Lawrence and on the Scotian Shelf. The timing and extent of spawning in the Georges Bank - Middle Atlantic spawning group has not been clearly determined. The eggs, larvae, and early juveniles are pelagic. Older juvenile and adult white hake are demersal. The eggs are buoyant. Pelagic juveniles become demersal at 2.0 to 2.4 in (50 to 60 mm) total length. The pelagic juvenile stage lasts about two months. White hake attain a maximum length of 53 in (135 cm) and weigh up to 49 lbs (22 kg). Female white hake are larger than males.

Population Status: The 2008 assessment for white hake concluded the stock was overfished and overfishing was occurring. A new comprehensive stock assessment is planned for early 2013.

6.2.1.15 SNE/MA Winter Flounder

Life History: The winter flounder, blackback, or lemon sole, Psuedopleuronectes americanus, is a demersal flatfish distributed in the western North Atlantic from Labrador to Georgia. Winter flounder prefer mud, sand, clay, and even gravel habitat, but offshore populations may occur on hard bottom (Collette and Klein-MacPhee 2002). They migrate inshore in the fall and early winter and spawn in late winter and early spring (Pereira et al. 1999), with peak spawning occurring in Massachusetts Bay and south of Cape Cod during February and March, continuing into May. After spawning, adults typically leave inshore areas when water temperatures exceed 59 °F (15°C) although some remain inshore year-round. The eggs of winter flounder are demersal, adhesive, and stick together in clusters. Larvae are initially planktonic but become increasingly bottom-oriented as metamorphosis approaches. Metamorphosis is when the left eye migrates to the right side of the body and the larvae become "flounder-like". It begins around 5 to 6 weeks after hatching, and finishes by the time the larvae are 0.3 to 0.4 in (8 to 9 mm) in length at about 8 weeks after hatching. Newly metamorphosed young-of-the-year winter flounder reside in shallow water where individuals may grow to about 4 in (100 mm) within the first year (Collette and Klein-MacPhee 2002). In U.S. waters, the resource is assessed and managed as three stocks: Gulf of Maine, Southern New England/Mid-Atlantic (SNE/MA), and Georges Bank.

Population Status: A benchmark assessment completed for SNE/MA winter flounder in 2011 concluded that this stock was overfished but overfishing was not occurring in 2010 (NEFSC 2011).

6.2.1.16 GOM/GB Windowpane Flounder

Life History: Windowpane flounder or sand flounder, *Scophthalmus aquosus*, is a left-eyed, flatfish species that occurs in the northwest Atlantic from the Gulf of St. Lawrence to Florida (Collette and Klein-MacPhee 2002). Windowpane prefer sandy bottom habitats. They occur at depths from the high water mark to 656 ft (200 m), with the greatest abundance at depths < 180 ft (55 m), and at temperatures between 32º-80ºF (0º-26.8ºC) (Moore 1947). On Georges Bank, the species is most abundant at depths <60 m during late spring through autumn but overwintering occurs in deeper waters out to 366 m (Chang et al. 1999). Windowpane flounders are assessed and managed as two stocks: Gulf of Maine-Georges Bank (GOM/GB) and Southern New England-Mid-Atlantic Bight (SNE/MA) due to differences in growth rates, size at maturity, and relative abundance trends. Windowpane generally reach sexual maturity between ages 3 and 4 (Moore 1947), though males can mature at age 2 (Grosslein and Azarovitz 1982). On Georges Bank, median length at maturity is nearly the same for males (8.7 in, 22.2 cm) and females (8.9 in, 22.5 cm) (O'Brien et al. 1993). Spawning occurs on Georges bank during July and August and peaks again between October and November at temperatures of 55º- 61ºF (13º-16ºC) (Morse and Able 1995). Eggs incubate for 8 days at 50º-55ºF (10º-13ºC) and eye migration occurs approximately 17- 26 days after hatching (G. Klein-MacPhee, unpubl. data, as cited in Collette and Klein-MacPhee 2002). During the first year of life, spring-spawned fish have significantly faster growth rates than autumn- spawned fish, which may result in differential natural mortality rates between the two cohorts (Neuman et al. 2001). Young windowpane settle inshore and then move offshore to deeper waters as they grow. Trawl survey data suggest that windowpane on Georges Bank aggregate in shallow water during summer and early fall and move offshore in the winter and early spring (Grosslein and Azarovitz 1982).

Population Status: Indices from NEFSC fall surveys are used as an indicator of stock abundance and biomass. These biomass indices have fluctuated above and below the time series median as fishing mortality rates have fluctuated below and above the point where the stock could replenish itself. Biomass indices increased to levels at or slightly above the median during 1998-2003, but then fell below the median from 2004-2010 and was 29% of B_{MSY} in 2010 (NEFSC 2012). According to a 2012 assessment update, the stock was overfished and overfishing was occurring in 2010.

6.2.1.17 SNE/MAB Windowpane Flounder

Life History: Windowpane flounder, *Scophthalmus aquosus*, is a left-eyed, flatfish species that occurs in the northwest Atlantic from the Gulf of St. Lawrence to Florida, with the greatest abundance on Georges Bank and in the New York Bight (Collette and Klein-MacPhee 2002). Windowpane prefer sandy bottom habitats at depths < 180 ft (55 m), but they occur at depths from the high water mark to 656 ft (200 m) and at temperatures between 32º-80ºF (0º-26.8ºC) (Moore 1947). Windowpane flounders are assessed and managed as two stocks: Gulf of Maine-Georges Bank (GOM/GB) and Southern New England-Mid-Atlantic Bight (SNE/MA) due to differences in growth rates, size at maturity, and relative abundance trends. Windowpane generally reach sexual maturity between ages 3 and 4 (Moore 1947), though males can mature at age 2 (Grosslein and Azarovitz 1982). In Southern New England, median length at maturity is nearly the same for males (8.5 in, 21.5 cm) and females (8.3 in, 21.2 cm) (O'Brien et al. 1993). A split spawning season occurs between Virginia and Long Island with peaks in spring and fall (Chang et al. 1999). Spawning occurs in the southern Mid-Atlantic during April and May and then peaks again in October or November (Morse and Able 1995). Eggs incubate for 8 days at 50º-55ºF (10º-13ºC) and eye migration occurs approximately 17- 26 days after hatching (G. Klein-MacPhee, unpubl. data, as cited in Collette and Klein-MacPhee 2002). During the first year, spring-spawned fish have significantly faster growth rates than autumn-spawned fish, which may lead to different natural mortality rates (Neuman et al. 2001).

Population Status: A 2012 assessment update indicated that in 2010 biomass was well above the B_{MSY} proxy (146%) and overfishing was not occurring (NEFSC 2012). As a result this stock has been declared rebuilt.

6.2.1.18 Ocean Pout

Life History: Ocean pout, *Zoarces americanus*, is a demersal eel-like species found in the northwest Atlantic from Labrador to Delaware. Ocean pout are most common sand and gravel bottom (Orach-Meza 1975) at an average depth of 49-262 ft (15-80 m) (Clark and Livingstone 1982) and temperatures of 43º- 48º F (6º-9º C) (Scott 1982). In U.S. waters, ocean pout are assessed and managed as a unit stock from the Gulf of Maine to Delaware. In the Gulf of Maine, median length at maturity for males and females was 11.9 in (30.3 cm) and 10.3in (26.2 cm), respectively. Median length at maturity for males and females from Southern New England was 12.6 in (31.9 cm) and 12.3in (31.3 cm), respectively (O'Brien et al. 1993). According to tagging studies conducted in Southern New England, ocean pout appear not to migrate, but do move between different substrates seasonally. In Southern New England-Georges Bank they occupy cooler rocky areas in summer, returning in late fall (Orach-Meza 1975). In the Gulf of Maine, they move out of inshore areas in the late summer and then return in the spring. Spawning occurs between September and October in Southern New England (Olsen and Merriman 1946) and in August and September in Newfoundland (Keats et al. 1985). Adults aggregate in rocky areas prior to spawning. Eggs are internally fertilized (Mercer et al. 1993; Yao and Crim 1995a) and females lay egg masses in encased in a gelatinous matrix that they then guard during the incubation period of 2.5-3 months (Keats et al. 1985). Ocean pout hatch as juveniles on the bottom and are believed to remain there throughout their lives (Methven and Brown 1991; Yao and Crim 1995a).

Population Status: Between 1975 and 1985, NEFSC spring trawl survey biomass indices increased to record high levels, peaking in 1981and 1985. Since 1985, survey catch per tow indices have generally declined, and the 2010 index was the lowest value in the time series. Catch and exploitation rates have also been low, but stock size has not increased. A 2012 assessment update determined that in 2010 ocean pout was overfished, but overfishing was not occurring (NEFSC 2012).

6.2.1.19 Atlantic Halibut

Life History: Atlantic halibut, *Hippoglossus hippoglossus*, is the largest species of flatfish found in the northwest Atlantic Ocean. This long-lived, late-maturing flatfish is distributed from Labrador to southern New England (Collette and Klein-MacPhee 2002). They prefer sand, gravel, or clay substrates at depths up to 1000 m (Scott and Scott 1988; Miller et al. 1991). Along the coastal Gulf of Maine, halibut move to deeper water in winter and shallower water in summer (Collette and Klein-MacPhee 2002). Atlantic halibut reach sexual maturity between 5 to 15 years and the median female age of maturity in the Gulf of Maine-Georges Bank region is 7 years (Sigourney et al. 2006). In general, Atlantic halibut spawn once per year in synchronous groups during late winter through early spring (Neilson et al. 1993) and females can produce up to 7 million eggs per year depending on size (Haug and Gulliksen 1988). Spawning is believed to occur in waters of the upper continental slope at depths of 200 m or greater (Scott and Scott 1988). Halibut eggs are buoyant but drift suspended in the water at depths of 54-90 m (Tåning 1936). Incubation times are 13-20 days depending on temperature (Blaxter et al. 1983), how long halibut live in the plankton after hatching is not known.

Population Status: Survey indices are highly variable because the NEFSC trawl surveys catch low numbers of halibut. The spring survey abundance index suggested a relative increase during the late 1970s to the early 1980s, a decline during the 1990s, and an increase since the late 1990s. Based on the results of a 2012 assessment update, Atlantic halibut is overfished and overfishing is not occurring (NEFSC 2012).

6.2.1.20 Atlantic Wolffish

Life History: Atlantic wolffish, *Anarhichas lupus*, is a benthic fish distributed on both sides of the North Atlantic Ocean. In the northwest Atlantic the species occurs from Davis Straits off of Greenland to Cape Cod and sometimes in southern New England and New Jersey waters (Collette and Klein-MacPhee 2002). In the Georges Bank-Gulf of Maine region, abundance is highest in the southwestern portion at depths of 263-394 ft (80 - 120 m), but wolffish are also found in waters from 131-787 ft (40 to 240 m) (Nelson and Ross 1992) and at temperatures of 29.7º-50.4º F (-1.3º-10.2º C) (Collette and Klein-MacPhee 2002). They prefer complex benthic habitats with large stones and rocks (Pavlov and Novikov 1993). Atlantic wolffish are mostly sedentary and solitary, except during mating season. There is some evidence of a weak seasonal shift in depth between shallow water in spring and deeper water in fall (Nelson and Ross 1992). Most individuals mature by age 5-6 when they reach approximately 18.5 in (47 cm) total length (Nelson and Ross 1992, Templeman 1986). However, size at first maturity varies regionally; northern fish mature at smaller sizes than faster growing southern fish. There is conflicting information about the spawning season for Atlantic wolffish in the Gulf of Maine-Georges Bank region. Peak spawning period is believed to occur from September to October (Collette and Klein-MacPhee 2002), though laboratory studies have shown that wolffish can spawn most of the year (Pavlov and Moksness 1994). Eggs are laid in masses and that the males are thought to brood for several months. Incubation time is dependent on water temperature and may be 3 to 9 months. Larvae and early juveniles are pelagic between 20 and 40 mm TL, with settlement beginning by 50 mm TL (Falk-Petersen and Hansen 1990).

Population Status: NEFSC spring and fall bottom trawl survey indices show abundance and biomass of Atlantic wolffish generally has declined over the last two to three decades. However, Atlantic wolffish are encountered infrequently on NEFSC bottom trawl surveys and there is uncertainty as to whether the NEFSC surveys adequately sample this species (NDPSWG, 2009). Atlantic wolffish continues to be considered a data poor species. An assessment update in 2012 determined that the stock is overfished, but overfishing is not occurring.

6.2.2 Assemblages of Fish Species

Georges Bank and the Gulf of Maine have historically had high levels of fish production. Several studies have identified demersal fish assemblages over large spatial scales. Overholtz and Tyler (1985) found five depth-related groundfish assemblages for Georges Bank and the Gulf of Maine that were persistent temporally and spatially. The study identified depth and salinity as major physical influences explaining assemblage structure. Table 10 (adapted from Amendment 16) compares the six assemblages identified in Gabriel (1992) with the five assemblages from Overholtz and Tyler (1985). This EA considers these assemblages and relationships to be relatively consistent. Therefore, these descriptions generally describe the affected area. The assemblages include allocated target species, as well as non-allocated target species and bycatch. The terminology and definitions of habitat types in Table 10 vary slightly between the two studies. For further information on fish habitat relationships, see Table 8.

Table 10 - Comparison of Demersal Fish Assemblages of Georges Bank and the Gulf of Maine

Overholtz and Tyler (1985)		Gabriel (1992)	
Assemblage	Species	Species	Assemblage
Slope and Canyon	offshore hake, blackbelly rosefish, Gulf stream flounder, fourspot flounder, goosefish, silver hake, white hake, red hake	offshore hake, blackbelly rosefish, Gulf stream flounder, fawn cusk-eel, longfin hake, armored sea robin	Deepwater
Intermediate	silver hake, red hake, goosefish, Atlantic cod, haddock, ocean pout, yellowtail flounder, winter skate, little skate, sea raven, longhorn sculpin	silver hake, red hake, goosefish, northern shortfin squid, spiny dogfish, cusk	Combination of Deepwater Gulf of Maine/Georges Bank and Gulf of Maine-Georges Bank Transition
Shallow	Atlantic cod, haddock, pollock, silver hake, white hake, red hake, goosefish,	Atlantic cod, haddock, pollock	Gulf of Maine-Georges Bank Transition Zone
	yellowtail flounder, windowpane winter flounder, winter skate, little skate, longhorn sculpin, summer flounder, sea raven, sand lance	yellowtail flounder, windowpane winter flounder, winter skate, little skate, longhorn sculpin	Shallow Water Georges Bank-southern New England
Gulf of Maine-Deep	white hake, American plaice, witch flounder, thorny skate, silver hake, Atlantic cod, haddock, cusk, Atlantic wolffish	white hake, American plaice, witch flounder, thorny skate, redfish	Deepwater Gulf of Maine- Georges Bank
Northeast Peak	Atlantic cod, haddock, pollock, ocean pout, winter flounder, white hake, thorny skate, longhorn sculpin	Atlantic cod, haddock, pollock	Gulf of Maine-Georges Bank Transition Zone

6.2.3 Stock Status Trends

The most recent stock assessments for the 20 groundfish stocks can be found via the NEFSC website at http://www.nefsc.noaa.gov/saw/. The information in this section is adapted from the most recent stock assessment report for the groundfish stocks. The information in this section is adapted from the most recent stock assessment report for the groundfish stocks. Table 8 summarizes the status of the northeast groundfish stocks.

Table 11 - Status of the Northeast Groundfish Stocks for fishing year 2014

Stock Status	Stock (assessment source)
Overfished and Overfishing Biomass < ½ B_{MSY} and $F > F_{MSY}$	GB Cod (GARM III) GOM Cod (SARC 54) Cape Cod/GOM Yellowtail Flounder (assessment update) White Hake (GARM III,) Witch Flounder (assessment update) Northern Windowpane (operational assessment) GB Yellowtail Flounder (2012 TRAC)
Overfished but not Overfishing Biomass < ½ B_{MSY} and $F \leq F_{MSY}$	Ocean Pout (assessment update) Atlantic Halibut (assessment update) GOM Winter Flounder (SARC 52)[b] Atlantic wolffish (assessment update) SNE/MA Winter Flounder
Not Overfished but Overfishing Biomass ≥ ½ B_{MSY} and $F > F_{MSY}$	GOM Haddock (assessment update)
Not Overfished and not Overfishing Biomass ≥ ½ B_{MSY} and $F \leq F_{MSY}$	Pollock (SARC 50) Acadian Redfish (assessment update) SNE/MA yellowtail flounder (SARC 54) American Plaice (assessment update) GB Haddock (assessment update) GB Winter Flounder(SARC 52) Southern Windowpane (assessment update)

Notes:

B_{MSY} = biomass necessary to produce maximum sustainable yield (MSY) F_{MSY} = fishing mortality rate that produces the MSY

[b] Rebuilding, but no defined rebuilding program due to a lack of data. Unknown whether the stock is overfished.

Assessment references (available at http://www.nefsc.noaa.gov/saw/)

Northeast Fisheries Science Center. 2008. Assessment of 19 Northeast Groundfish Stocks through 2007: Report of the 3rd Groundfish Assessment Review Meeting (GARM III), Northeast Fisheries Science Center, Woods Hole, Massachusetts, August 4-8, 2008. US Dep Commer, NOAA Fisheries, Northeast Fish Sci Cent Ref Doc. 08-15; 884 p + xvii.

Northeast Fisheries Science Center. 2010. 50th Northeast Regional Stock Assessment Workshop (50th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 10-17; 844 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026

Northeast Fisheries Science Center. 2011. 52nd Northeast Regional Stock Assessment Workshop (52nd SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 11-17; 962 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026

Northeast Fisheries Science Center. 2012. 53rd Northeast Regional Stock Assessment Workshop (53rd SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-03; 33 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026

Northeast Fisheries Science Center. 2012. 54th Northeast Regional Stock Assessment Workshop (54th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-14; 40 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026,

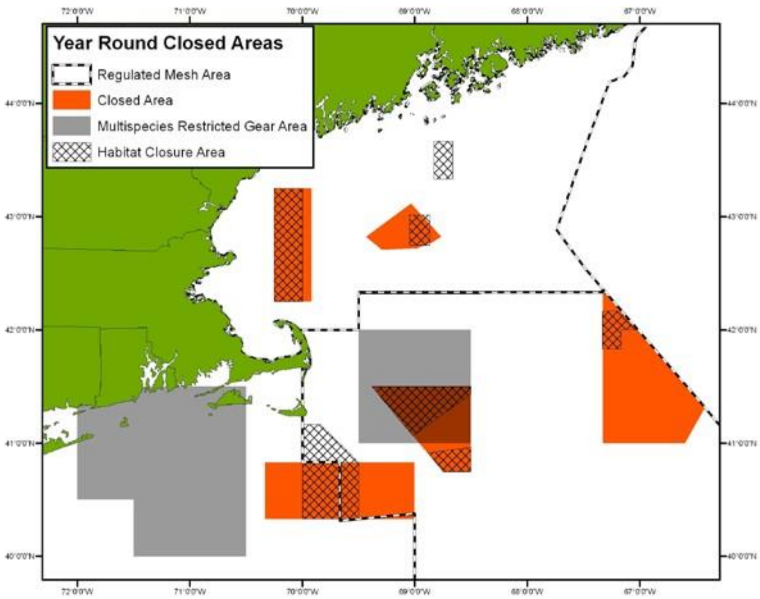
Northeast Fisheries Science Center. 2012. Assessment or Data Updates of 13 Northeast Groundfish Stocks through 2010. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-06; 789 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026

6.2.4 Areas Closed to Fishing

Select areas are closed to some level of fishing to protect the sustainability of fishery resources. Long-term closures result in the removal or reduction of fishing effort from important fishing grounds. Therefore, fishery related mortalities to stocks utilizing the closed areas should decrease. Figure 5 shows the Closed Areas for FY 2013.

Amendment 13 to the Northeast Multispecies FMP and Amendment 10 of the Atlantic Sea Scallop FMP established year-round habitat closed areas which are off-limits to all mobile, bottom-tending gear like trawls and dredges. These closures were designed to minimize the adverse effects of fishing on EFH for species managed by the NEFMC (Table 8). In many cases, these closed areas overlap portions of the groundfish mortality closures (see Figure 5). However, in other cases (Jeffreys Bank in the Gulf of Maine and the area southeast of Nantucket Island) they do not. NEFMC Omnibus EFH Amendment 2 is currently evaluating the closed habitat areas. Therefore, these areas may be changed or eliminated in the future. FW 48 proposed allowing sectors to request exemptions to the closed areas. In addition, portions of four submarine canyons on the outer continental shelf are closed to all bottom trawling in order to protect vulnerable habitats for tilefish. Detailed descriptions and maps of these areas are available in Amendment 1 to the MAFMC Tilefish FMP.

Figure 5 - Northeast Multispecies Closed Areas and U.S./Canada



6.2.5 Interaction between Gear and Allocated Target Species

FY 2010 through FY 2011 data show that the majority of fish of all species caught on groundfish trips are caught with trawls. GARM III indicated that only cod and white hake are caught in significant numbers by gillnets. Only haddock are caught in significant numbers by hook and line.

6.3 Non-Allocated Target Species and Bycatch

Non-allocated target species are species which sector vessels are not assigned an ACE but can target and land. Bycatch refers to fish which are harvested in a fishery, but are discarded and not sold or kept for personal use. Non-allocated target species and bycatch may include a broad range of species. For purposes of this assessment the non-allocated target species and bycatch most likely to be affected by the sector operations plans include spiny dogfish, skates, and monkfish. This approach follows the convention established in Amendment 16. Spiny dogfish, skates, and monkfish were the top three non- groundfish species landed by multispecies vessels in FY 2006 and FY 2007 under the Category B (regular) DAS program (Amendment 16, Table 87). American lobster is also included as a non-target bycatch species for FY 2012 because many sector vessels also fish in the lobster fishery. These species have no allocation under the Northeast Multispecies FMP and are managed under separate FMPs. Fishermen commonly land monkfish and skates. Spiny dogfish tend to be relatively abundant in catches. Fishermen may land some spiny dogfish, but dogfish are often the predominant component of the discarded bycatch. Fishermen may discard monkfish when regulations or market conditions constrain the amount of the catch that they can land.

Scallops, fluke, whiting and squid are included in this section because fishing activity for these species will be affected by measures in this action that are designed to reduce or control catches of groundfish species by these fisheries.

6.3.1 Spiny Dogfish

Life History: The spiny dogfish, *Squalus acanthias,* occurs in the western North Atlantic from Labrador to Florida. Regulators consider spiny dogfish to be a unit stock off the coast of New England. In summer, dogfish migrate northward to the Gulf of Maine-Georges Bank region and into Canadian waters. They return southward in autumn and winter. Spiny dogfish tend to school by size and, when mature, by sex. The species bears live young, with a gestation period of about 18 to 22 months, and produce between 2 to 15 pups with an average of 6. Size at maturity for females is around 31 in (80 cm), but can vary from 31 to 33 in (78 cm to 85 cm) depending on the abundance of females.

Population Management and Status: The NEFMC and MAFMC jointly develop the spiny dogfish FMP for federal waters. The Atlantic States Marine Fisheries Commission (ASMFC) concurrently develops a plan for state waters. Spawning stock biomass of spiny dogfish declined rapidly in response to a directed fishery during the 1990's. NFMS initially implemented management measures for spiny dogfish in 2001. These measures have been effective in reducing landings and fishing mortality. Based upon the 2009 updated stock assessment performed by the Northeast Fisheries Science Center, the spiny dogfish stock is not presently overfished and overfishing is not occurring. NMFS declared the spiny dogfish stock rebuilt for the purposes of U.S. management in May 2010.

6.3.2 Skates

Life History: The seven species in the Northeast Region skate complex are: little skate (*Leucoraja erinacea*), winter skate (*L. ocellata*), barndoor skate (*Dipturus laevis)*, thorny skate (*Amblyraja radiata*), smooth skate (*Malacoraja senta*), clearnose skate (*Raja eglanteria*), and rosette skate (*L. garmani*). The barndoor skate is the most common skate in the Gulf of Maine, on Georges Bank, and in southern New England. Georges Bank and southern New England is the center of distribution for the little and winter skates in the Northeast Region. . The thorny and smooth skates typically occur in the Gulf of Maine. The clearnose and rosette skates have a more southern distribution, and occur primarily in southern New England and the Chesapeake Bight.

Skates are not known to undertake large-scale migrations. Skates tend to move seasonally in response to changes in water temperature. Therefore, they move offshore in summer and early autumn and then return inshore during winter and spring. Skates lay eggs enclosed in a hard, leathery case commonly called a mermaid's purse. Incubation time is 6 to 12 months, with the young having the adult form at the time of hatching.

Population Management and Status: NMFS implemented the Northeast Skate Complex Fishery Management Plan (Skate FMP) in September 2003. The FMP required by both dealers and vessels to report skate landings by species (http://www.nefmc.org/skates/fmp/fmp.htm). Possession prohibitions of barndoor, thorny, and smooth skates in the Gulf of Maine were also provisions of the FMP. The FMP implemented a trip limit of 10,000 lbs (4,536 kg) for winter skate, and required fishermen to obtain a Letter of Authorization to exceed trip limits for the little skate bait fishery.

In 2010 Amendment 3 to the Skate FMP implemented a rebuilding plan for smooth skate and established an ACL and annual catch target for the skate complex, total allowable landings for the skate wing and bait fisheries, and seasonal quotas for the bait fishery. Amendment 3 also reduced possession limits, in-season possession limit triggers, and other measures to improve management of the skate fisheries. Due to insufficient information about the population dynamics of skates, there remains considerable uncertainty about the status of skate stocks. Based on NEFSC bottom trawl survey data through autumn 2011/spring

2012 one skate species was overfished (thorny) and overfishing was not occurring in any of the seven skate species.

Skate landings have generally increased since 2000. The landings and catch limits proposed by Amendment 3 have an acceptable probability of promoting biomass growth and achieving the rebuilding (biomass) targets for thorny skates. Modest reductions in landings and a stabilization of total catch below the median relative exploitation ratio should cause skate biomass and future yield to increase.

6.3.3 Monkfish

Life History: Monkfish, *Lophius americanus*, also called goosefish, occur in the western North Atlantic from the Grand Banks and northern Gulf of St. Lawrence south to Cape Hatteras, North Carolina. Monkfish occur from inshore areas to depths of at least 2,953 ft (900 m). Monkfish undergo seasonal onshore-offshore migrations. These migrations may relate to spawning or possibly to food availability.

Female monkfish begin to mature at age 4 with 50 percent of females maturing by age 5 (about 17 in [43 cm]). Males generally mature at slightly younger ages and smaller sizes (50 percent maturity at age 4.2 or 14 in [36 cm]). Spawning takes place from spring through early autumn. It progresses from south to north, with most spawning occurring during the spring and early summer. Females lay a buoyant egg raft or veil that can be as large as 39 ft (12 m) long and 5 ft (1.5 m) wide, and only a few mm thick. The larvae hatch after about 1 to 3 weeks, depending on water temperature. The larvae and juveniles spend several months in a pelagic phase before settling to a benthic existence at a size of about 3 in (8 cm).

Population Management and Status: NMFS implemented the Monkfish FMP in 1999 (NEFMC and MAFMC 1998). The FMP included measures to stop overfishing and rebuild the stocks through a number of measures. These measures included:

- Limiting the number of vessels with access to the fishery and allocating DAS to those vessels;
- Setting trip limits for vessels fishing for monkfish; minimum fish size limits;
- Gear restrictions;
- Mandatory time out of the fishery during the spawning season; and
- A framework adjustment process.

The Monkfish FMP defines two management areas for monkfish (northern and southern), divided roughly by an east-west line bisecting Georges Bank. Monkfish in both management regions are not overfished and overfishing is not occurring.

6.3.4 Summer Flounder

Life History: Summer flounder, *Paralichthys dentatus*, occur in the western North Atlantic from the southern Gulf of Maine to South Carolina. Summer flounder are concentrated in bays and estuaries from late spring though early autumn, when an offshore migration to the outer continental shelf is undertaken.

Spawning occurs during autumn and early winter, and the larvae are transported toward coastal areas by prevailing water currents. Development of post larvae and juveniles occurs primarily within bays and estuarine areas. Most fish are sexually mature by age 2. Female summer flounder may live up to 20 years, but males rarely live for more than 10 years. Growth rates differ appreciably between the sexes with females attaining weights up to 11.8 kg (26 lbs.).

Population Management and Status: The FMP was developed by the Mid-Atlantic Fishery Management Council in 1988. Scup and black sea bass were later incorporated into the FMP. Amendment 2, implemented in 1993, established a commercial quota allocated to the states, a recreational harvest limit, minimum size limits, gear restrictions, permit and reporting requirements, and an annual review process to establish specifications for the coming fishing year. In 1999, Amendment 12 revised the overfishing definitions for all three species, established rebuilding programs, addressed bycatch and habitat issues and established a framework adjustment procedure for the FMP to allow for a streamlined process for relatively minor changes to management measures.

The stock is not overfished and overfishing is not occurring, although the stock is still rebuilding (NEFSC 2008).

6.3.5 American Lobster

Life History: The American lobster, *Homarus americanus*, occurs in continental shelf waters from Maine to North Carolina. The American lobster is long-lived and known to reach more than 40 pounds in body weight (Wolff, 1978). Lobsters are encased in a hard external skeleton that is periodically cast off (molted) to allow growth and mating to take place. Eggs are carried under the female's abdomen during the 9 to 12 month incubation period. Larger lobsters produce eggs with greater energy content and thus, may produce larvae with higher survival rates (Attard and Hudon, 1987). Seasonal timing of egg extrusion and larval hatching is somewhat variable among areas and may also vary due to seasonal weather patterns. Overall, hatching tends to occur over a four month period from May – September, occurring earlier and over a longer period in the southern part of the range. The pelagic larvae molt four times before they resemble adults and settle to the bottom. They will molt more than 20 times over a period of 5 to 8 years before they reach the minimum legal size to be harvested. Cooper and Uzmann, (1971) and Uzmann, et al., (1977) observed that tagged lobster were observed to move to relatively cool deep canyon areas in late fall and winter, and then migrate back to shallower and relatively warm water in spring and summer.

Population Management and Status: The states and NMFS cooperatively manage the American lobster resource and fishery under the framework of the Atlantic States Marine Fisheries Commission (ASMFC). States have jurisdiction for implementing measures in state waters, while NMFS implements complementary regulations in federal waters. Inshore landings have increased steadily since the early 1970s. Fishing effort is intense and increasing throughout much of the range of the species. The majority of the landings are reportedly harvested from state waters (within 3 miles of shore). The most recent peer-reviewed stock assessment for American lobster, published by the ASMFC in 2009, identifies the status of the three biological stock units, delineated primarily on the basis of regional differences in life history parameters, such as lobster distribution and abundance, patterns of migration, location of spawners, and the dispersal and transport of larvae. These stock units are the Gulf of Maine, Georges Bank, and Southern New England. While each area has an inshore and offshore component, Gulf of Maine and Southern New England areas support predominantly inshore fisheries and the Georges Bank supports a predominantly offshore fishery. The most recent 2009 Stock Assessment Report concluded that "(t)he American lobster fishery resource presents a mixed picture, with stable abundance for much of the Gulf of Maine stock, increasing abundance for the Georges Bank stock, and decreased abundance and recruitment yet continued high fishing mortality for the Southern New England stock (ASMFC 2009).

6.3.6 Whiting (Silver Hake)

This description is quoted from the NEFSC Status of Fishery Resources (http://www.nefsc.noaa.gov/sos/spsyn/pg/silverhake/).

Life History: Silver hake, also known as whiting, *Merluccius bilinearis*, range primarily from Newfoundland to South Carolina. Silver hake are fast swimmers with sharp teeth, and are important fish predators that also feed heavily on crustaceans and squid (Lock and Packer 2004). In U.S. waters, two stocks have been identified based on differences of head and fin lengths (Almeida 1987), otolith morphometrics (Bolles and Begg 2000), otolith growth differences, and seasonal distribution patterns (Lock and Packer 2004). The northern silver hake stock inhabits Gulf of Maine - Northern Georges Bank waters, and the southern silver hake stock inhabits Southern Georges Bank - Middle Atlantic Bight waters. Silver hake migrate in response to seasonal changes in water temperatures, moving toward shallow, warmer waters in the spring. They spawn in these shallow waters during late spring and early summer and then return to deeper waters in the autumn (Brodziak et al. 2001). The older, larger silver hake especially prefer deeper waters. During the summer, portions of both stocks can be found on Georges Bank, whereas during the winter fish in the northern stock move to deep basins in the Gulf of Maine, while fish in the southern stock move to outer continental shelf and slope waters. Silver hake are widely distributed, and have been observed at temperature ranges of 2-17° C (36-63° F) and depth ranges of 11-500 m (36-1,640 ft). However, they are most commonly found between 7-10º C (45-50º F) (Lock and Packer 2004).

Population Management and Status: Due to their abundance and availability, silver hake have supported important U.S. and Canadian fisheries as well as distant-water fleets. Landings increased to 137,000 mt in 1973 and then declined sharply with increased restrictions on distant-water fleet effort and implementation of the Magnuson Fishery Conservation and Management Act (MFCMA) in 1977. U.S. landings during 1987-1996 were relatively stable, averaging 16,000 mt per year, but have gradually declined to a historic low of 6,800 mt in 2005.

The otter trawl remains the principal gear used in the U.S. fishery, and recreational catches have been low since 1985. Silver hake are managed under the New England Fishery Management Council's Northeast Multispecies Fishery Management Plan ("non-regulated multispecies" category). In 2000, the New England Fishery Management Council implemented Amendment 12 to this FMP, and placed silver hake into the “small mesh multispecies” management unit, along with red hake and offshore hake. This amendment established retention limits based on net mesh size, adopted overfishing definitions for northern and southern stocks, identified essential fish habitat for all life stages, and set requirements for fishing gear (NEFMC 2000). In 2005, the 3-year average exploitation index for 2003-2005 was below the FMSY proxy and the 3-year average biomass index remained above the ½ BMSY proxy, indicating that the stock is not overfished and overfishing is not occurring.

6.3.7 Loligo Squid

This description is quoted from the NEFSC Status of Fishery Resources (http://www.nefsc.noaa.gov/sos/spsyn/iv/lfsquid/).

Life History: Longfin inshore squid (*Loligo pealeii*) are distributed primarily in continental shelf waters located between Newfoundland and the Gulf of Venezuela (Cohen 1976; Roper et al. 1984). In the northwest Atlantic Ocean, longfin squid are most abundant in the waters between Georges Bank and Cape Hatteras where the species is commercially exploited. The stock area extends from the Gulf of Maine to Cape Hatteras. Distribution varies seasonally. North of Cape Hatteras, squid migrate offshore during late autumn to overwinter in warmer waters along the shelf edge and slope, and then return inshore during the spring where they remain until late autumn (Jacobson 2005). The species lives for about nine months, grows rapidly, and spawns year-round (Brodziak and Macy 1996) with peaks during late spring and autumn. Individuals hatched in summer grow more rapidly than those hatched in winter and males grow faster and attain larger sizes than females (Brodziak and Macy 1996).

Population Management and Status: The domestic fishery occurs primarily in Southern New England and Mid-Atlantic waters, but some fishing also occurs along the edge of Georges Bank. Fishing patterns reflect seasonal Loligo distribution patterns and effort is generally directed offshore during October through April and inshore during May through September. The fishery is dominated by small-mesh otter trawlers, but near-shore pound net and fish trap fisheries occur during spring and summer. Since 1984, annual offshore landings have generally been three-fold greater than inshore landings. The stock is managed by the Mid-Atlantic Fishery Management Council under the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (FMP). Management measures for the *L. pealeii* stock include annual total allowable catches (TACs) which have been partitioned into seasonal quotas since 2000 (trimesters in 2000 and quarterly thereafter), a moratorium on fishery permits, and a minimum codend mesh size of 1 7/8 inches.

6.3.8 Atlantic Sea Scallops

Life History: This description is quoted from the NEFSC Status of Fishery Resources (http://www.nefsc.noaa.gov/sos/spsyn/iv/lfsquid/). Sea scallops *Placopecten magellanicus* are distributed in the northwest Atlantic Ocean from Newfoundland to North Carolina, mainly on sand and gravel sediments where bottom temperatures remain below 20°C (68°F). North of Cape Cod, concentrations generally occur in shallow water less than 40 m (22 fathoms) deep. South of Cape Cod and on Georges Bank, sea scallops typically occur at depths between 25 and 200 m (14 to 110 fathoms), with commercial concentrations generally between 35 and 100 m (19 to 55 fathoms). Sea scallops are filter feeders, feeding primarily on phytoplankton, but also on microzooplankton and detritus (Hart and Chute 2004). Sea scallops grow rapidly during the first several years of life. Between ages 3 and 5, they commonly increase 50 to 80% in shell height and quadruple their meat weight. Sea scallops have been known to live more than 20 years. They usually become sexually mature at age 2, but individuals younger than age 4 probably contribute little to total egg production. Sexes are separate and fertilization is external. Spawning usually occurs in late summer and early autumn; spring spawning may also occur, especially in the Mid-Atlantic Bight. Sea scallops are highly fecund; a single large female can release hundreds of millions of eggs annually. Larvae remain in the water column for four to seven weeks before settling to the bottom. Sea scallops attain commercial size at about four to five years old, though historically, three year olds were often exploited.

Population and Management Status: The commercial fishery for sea scallops is conducted year round, primarily using offshore New Bedford style scallop dredges. A small percentage of the fishery employs otter trawls, mostly in the Mid-Atlantic. The principal U.S. commercial fisheries are in the Mid-Atlantic (from Virginia to Long Island, New York) and on Georges Bank and neighboring areas, such as the Great South Channel and Nantucket Shoals. There is also a small, primarily inshore fishery for sea scallops in the Gulf of Maine. Recreational fishing is insignificant. Sea scallops have a somewhat uncommon combination of life-history attributes: low mobility, rapid growth, and low natural mortality. The Council established the Scallop FMP in 1982. A number of Amendments and Framework Adjustments have been implemented since that time to adjust the original plan. The scallop resource was last assessed in 2010 (SARC 50) and it was not overfished, and overfishing was not occurring. The Scallop PDT has evaluated biomass and fishing mortality since and based on 2012 estimates, biomass is 119,000 mt, well above the threshold for an overfished stock (1/2 Bmsy = 62,000 mt), and almost at Bmsy (125,000 mt). The estimate of fishing mortality overall is 0.34, above the target F of 0.32 but below the overfishing limit threshold of 0.38. Total catch has been stable at about 20-30,000 mt since 2001, up from about 5,000 mt harvests of the late 1990s.

6.3.9 Interaction between Gear and Non-allocated Target Species and Bycatch

The majority of the proposed sectors have minimal operational history; therefore, the analysis of interactions between gear and non-allocated target species and bycatch is based in part on catch information for the Northeast Multispecies FMP common pool fishery from FY 1996 to FY 2006. It is also based on sector data from FY 2009 to FY 2011, as presented in Section 6.5.10.

The Final Supplemental Environmental Impact Statement to Amendment 2 to the Monkfish FMP (NEFMC and MAFMC 2003) evaluated the potential adverse effects of gears used in the directed monkfish fishery. It evaluated impacts for monkfish and other federally-managed species, as well as the effects of fishing activities regulated under other federal FMPs on monkfish. Bottom trawls and bottom gillnets and the two gears used in the monkfish fishery. Amendment 2 to the Monkfish FMP (NEFMC and MAFMC 2003) describes these gears in detail. Sectors would use these same gears in FY 2012.

Fishermen in the Northeast Region harvest skates in two very different ways. Fishermen harvest whole skates for lobster bait. They also harvest skate wings for food. Vessels tend to catch skates when targeting other species like groundfish, monkfish, and scallops. The vessels will land skate if the price is high enough. The recent NEFMC Amendment to the Skate FMP and accompanying Final Supplemental Environmental Impact Statement (NEFMC 2009b) contain detailed information about skate fisheries.

Dogfish have the potential to interact with all gear types used by the sectors. Table 16 shows that otter trawl gear caught the majority of non-allocated target species and bycatch between FY 1996 to FY 2006.

Table 12 – Landings (mt) for Non-allocated Target Species and Bycatch by Gear Type[a]

	Gear Type									
	Trawl		Gillnet		Dredge		Other Gear		Total[b]	
Species	Landings	Discard	Landings	Discard	Landings	Discard	Landings	Discard	Landings	Discard
Monkfish	N	16,516	NA	6,526	NA	16,136	NA	4 [c]	228,000	39,182
Skates	117,381	315,308	29,711	26,601	--	146,725	4,413	2,646 [d]	151,505	491,280
Dogfish	24,368	61,914	72,712	39,852	--	--			98,026	101,766

Notes:
NA = landings or discard data not available for individual fishery gear type for this species.
-- = None reported
[a] monkfish 1996-2006, skates 1996-2006, dogfish 1996-2006
[b] Total landings or discards may differ slightly from the sum of the individual fishery entries due to differences in rounding.
[c] Shrimp Trawl
[d] Line and Shrimp Trawl
Source: Northeast Data Poor Stocks Working Group 2007a; Northeast Data Porr Stocks Working Group 2007b; Sosebee et al. 2008; NEFSC 2006a.

6.4 Protected Resources

Numerous protected species inhabit the environment within the Northeast Multispecies FMP management unit. Therefore, many protected species potentially occur in the operations area of the fishery. These species are under NMFS jurisdiction and are afforded protection under the Endangered Species Act of 1973 (ESA) and/or the Marine Mammal Protection Act of 1972 (MMPA. As listed in Table 13, 17 marine mammal, sea turtle, and fish species are classified as endangered or threatened under the ESA, three others are candidate species under the ESA. The remaining species in Table 13 are protected by the MMPA and are known to interact with the Northeast multispecies fishery. Non ESA-listed species protected by the MMPA that utilize this environment and have no documented interaction with the Northeast multispecies fishery will not be discussed in this document.

6.4.1 Species Present in the Area

Table 13 lists the species, protected either by the ESA, the MMPA, or both, that may be found in the environment utilized by sectors. Table 13 also includes three candidate fish species, as identified under the ESA.

A status review for Atlantic sturgeon was completed in 2007 which indicated that five distinct population segments (DPS) of Atlantic sturgeon exist in the United States (ASSRT 2007). On October 6, 2010, NMFS proposed listing these five DPSs of Atlantic sturgeon along the U.S. East Coast as either threatened or endangered species (75 FR 61872 and 75 FR 61904). A final listing was published on February 6th, 2012 (77 FR 5880 and 75 FR 5914). The GOM DPS of Atlantic sturgeon has been listed as threatened, and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs of Atlantic sturgeon have been listed as endangered. Atlantic sturgeon from any of the five DPSs could occur in areas where the multispecies fishery operates 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 were rarely reported in the otter trawl observer dataset , as well as sink gillnet and drift gillnet gear (ASMFC TC 2007).

Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA. Candidate species also include those species for which NMFS has initiated an ESA status review through an announcement in the *Federal Register*.

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. NMFS has initiated review of recent stock assessments, bycatch information, and other information for these candidate and proposed species. The results of those efforts are needed to accurately characterize recent interactions between fisheries and the candidate/proposed species in the context of stock sizes. Any conservation measures deemed appropriate for these species will follow the information reviews. Please note that once a species is proposed for listing the conference provisions of the ESA apply (see 50 CFR 402.10).

Table 13 - Species Protected Under the Endangered Species Act and/or Marine Mammal Protection Act that May Occur in the Operations Area for the FY 2013 Sectors[a]

Species	Status
Cetaceans	
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sperm whale (*Physeter macrocephalus)*	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Pilot whale (*Globicephala spp*.)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Spotted dolphin (*Stenella frontalis*)	Protected
Bottlenose dolphin (*Tursiops truncatus*)[b]	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic DPS	Threatened
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Atlantic sturgeon *(Acipenser oxyrinchus)*	
Gulf of Maine DPS	Threatened
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered
Cusk (*Brosme brosme*)	Candidate
Alewife (*Alosa pseudo harengus*)	Candidate
Blueback herring (*Alosa aestivalis*)	Candidate
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandicus*)	Protected
Hooded seal (*Cystophora cristata*)	Protected

Notes:

[a] MMPA-listed species occurring on this list are only those species that have a history of interaction with similar gear types within the action area of the Northeast Multispecies Fishery, as defined in the 2012 List of Fisheries.

[b] Bottlenose dolphin (*Tursiops truncatus*), Western North Atlantic coastal stock is listed as depleted.

[c] Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters.

6.4.2 Species Potentially Affected

The multispecies fishery has the potential to affect the fish, sea turtle, cetacean, and pinniped species discussed below. A number of documents contain background information on the range-wide status of the protected species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and bottom longlines). These documents include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Turtle Expert Working Group 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b, recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring et al. 1995; 2011), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002, ASSRT 2007).

6.4.2.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras, North Carolina. Turtles generally move up the coast from southern wintering areas as water temperatures warm in the spring (James et al. 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). A reversal of this trend occurs in the fall when water temperatures cool. Turtles pass Cape Hatteras by December and return to more southern waters for the winter (James et al. 2005, Morreale and Standora 2005, Braun-McNeill and Epperly 2004, Morreale and Standora 1998, Musick and Limpus 1997, Shoop and Kenney 1992, Keinath et al. 1987). Hard-shelled species typically occur as far north as Cape Cod whereas the more cold-tolerant leatherbacks occur in more northern Gulf of Maine waters in the summer and fall (Shoop and Kenney 1992, STSSN database http://www.sefsc.noaa.gov/seaturtleSTSSN.jsp).

On March 16, 2010, NMFS and USFWS published a proposed rule (75 FR 12598) to divide the worldwide population of loggerhead sea turtles into nine DPSs, as described in the 2009 Status Review. Two of the DPSs were proposed to be listed as threatened and seven of the DPSs, including the Northwest Atlantic Ocean DPS, were proposed to be listed as endangered. NMFS and the USFWS accepted comments on the proposed rule through September 13, 2010 (75 FR 30769, June 2, 2010). On March 22, 2011 (76 FR 15932), NMFS and USFWS extended the date by which a final determination on the listing action will be made to no later than September 16, 2011. This action was taken to address the interpretation of the existing data on status and trends and its relevance to the assessment of risk of extinction for the Northwest Atlantic Ocean DPS, as well as the magnitude and immediacy of the fisheries bycatch threat and measures to reduce this threat. New information or analyses to help clarify these issues were requested by April 11, 2011.

On September 22, 2011, NMFS and USFWS issued a final rule (76 FR 58868), determining that the loggerhead sea turtle is composed of nine DPSs (as defined in Conant *et al*., 2009) that constitute species that may be listed as threatened or endangered under the ESA. Five DPSs were listed as endangered (North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Northeast Atlantic Ocean, and Mediterranean Sea), and four DPSs were listed as threatened (Northwest Atlantic Ocean, South Atlantic Ocean, Southeast Indo-Pacific Ocean, and Southwest Indian Ocean). Note that the Northwest Atlantic Ocean (NWA) DPS and the Southeast Indo-Pacific Ocean DPS were original proposed as endangered.

The NWA DPS was determined to be threatened based on review of nesting data available after the proposed rule was published, information provided in public comments on the proposed rule, and further discussions within the agencies. The two primary factors considered were population abundance and population trend. NMFS and USFWS found that an endangered status for the NWA DPS was not warranted given the large size of the nesting population, the overall nesting population remains widespread, the trend for the nesting population appears to be stabilizing, and substantial conservation efforts are underway to address threats.

The September 2011 final rule also noted that critical habitat for the two DPSs occurring within the U.S. (NWA DPS and North Pacific DPS) will be designated in a future rulemaking. Information from the public related to the identification of critical habitat, essential physical or biological features for this species, and other relevant impacts of a critical habitat designation was solicited.

This proposed action only occurs in the Atlantic Ocean. As noted in Conant *et al*. (2009), the range of the four DPSs occurring in the Atlantic Ocean are as follows: NWA DPS – north of the equator, south of 60° N latitude, and west of 40° W longitude; Northeast Atlantic Ocean (NEA) DPS – north of the equator, south of 60° N latitude, east of 40° W longitude, and west of 5° 36' W longitude; South Atlantic DPS – south of the equator, north of 60° S latitude, west of 20° E longitude, and east of 60° W longitude; Mediterranean DPS – the Mediterranean Sea east of 5° 36' W longitude. These boundaries were determined based on oceanographic features, loggerhead sightings, thermal tolerance, fishery bycatch data, and information on loggerhead distribution from satellite telemetry and flipper tagging studies. Sea turtles from the NEA DPS are not expected to be present over the North American continental shelf in U.S. coastal waters, where the proposed action occurs (P. Dutton, NMFS, personal communication, 2011). Previous literature (Bowen *et al*. 2004) has suggested that there is the potential, albeit small, for some juveniles from the Mediterranean DPS to be present in U.S. Atlantic coastal foraging grounds. These data should be interpreted with caution however, as they may be representing a shared common haplotype and lack of representative sampling at Eastern Atlantic rookeries. Given that updated, more refined analyses are ongoing and the occurrence of Mediterranean DPS juveniles in U.S. coastal waters is rare and uncertain, if even occurring at all, for the purposes of this assessment we are making the determination that the Mediterranean DPS is not likely to be present in the action area. Sea turtles of the South Atlantic DPS do not inhabit the action area of this subject fishery (Conant *et al*. 2009). As such, the remainder of this assessment will only focus on the NWA DPS of loggerhead sea turtles, listed as threatened.

In general, sea turtles are a long-lived species and reach sexual maturity relatively late (NMFS SEFSC 2001; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Sea turtles are injured and killed by numerous human activities (NRC 1990; NMFS and USFWS 2007a, 2007b, 2007c, 2007d). Nest count data are a valuable source of information for each turtle species since the number of nests laid reflects the reproductive output of the nesting group each year. A decline in the annual nest counts has been measured or suggested for four of five western Atlantic loggerhead nesting groups through 2004 (NMFS and USFWS 2007a), however, data collected since 2004 suggests nest counts have stabilized or increased (TEWG 2009). Nest counts for Kemp's ridley sea turtles as well as leatherback and green sea turtles in the Atlantic demonstrate increased nesting by these species (NMFS and USFWS 2007b, 2007c, 2007d).

6.4.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2012), covering the time period between 2005 and 2009, reviewed the current population trend for each of these cetacean species within U.S. Economic Exclusion Zone (EEZ) waters. The SAR also estimated annual human-caused mortality and serious injury. Finally, it described the commercial fisheries that interact with each stock in the U.S. Atlantic. The following paragraphs summarize information from the SAR.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke whales) follow a general annual pattern of migration. They migrate from high latitude summer foraging grounds, including the Gulf of Maine and Georges Bank, to low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is a simplification of species movements as the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2012). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002). Blue whales are most often sighted along the east coast of Canada, particularly in the Gulf of St. Lawrence. They occur only infrequently within the U.S. EEZ (Waring et al. 2002).

North Atlantic right whales are federally listed as endangered under the ESA and a revised recovery plan was published in June 2005. Available information suggests that the North Atlantic right whale population increased at a rate of 2.4 percent per year between 1990 and 2007. The total number of North Atlantic right whales is estimated to be at least 396 animals in 2006 (Waring et al. 2012). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 2.4 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year, all in U.S. waters. The potential biological removal (PBR) level for this stock is 0.8 animals per year (Waring et al. 2012). The Potential Biological Removal (PBR) level is the maximum number of animals, not including natural mortalities, which may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.

Humpback whales are also listed as endangered under the ESA, and a recovery plan was published for this species in 1991. The North Atlantic population of humpback whales is conservatively estimated to be 7,698 (Waring et al. 2012). The best estimate for the GOM stock of humpback whale population is 847 whales and current data suggest that the Gulf of Maine humpback whale stock is steadily increasing in size (Waring et al. 2012). The minimum rate of annual human-caused mortality and serious injury to humpback whales averaged 5.2 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions resulted in an average of 3.8 mortality or serious injury incidents per year (3.4 from U.S. waters and 0.4 from Canadian waters). The PBR for this stock is 1.1 animals per year (Waring et al. 2012).

Fin, sei, and sperm whales are all federally listed as endangered under the ESA, with recovery plans currently in place. Based on data available for selected areas and time periods, the minimum population estimates for these western North Atlantic whale stocks are 3,269 fin whales, 208 sei whales (Nova Scotia stock) (Waring et al. 2012), and 3,539 sperm whales (Waring et al. 2007). Insufficient information exists to determine population trends for these large whale species.

The minimum rate of annual human-caused mortality and serious injury to fin whales averaged 2.6 mortality or serious injury incidents per year during 2005 to 2009 (Waring et al. 2012). Of these, fishery interactions resulted in an average of 0.8 mortality or serious injury incidents per year (0.6 from U.S. waters and 0.2 from Canadian waters). The PBR for this stock is 6.5 animals per year (Waring et al. 2012). For sei whales, the minimum rate of annual human-cause mortality and serious injury averaged 1.2 per year, of which 0.6 were a result of fishery interactions. PBR for the Nova Scotia sei whale stock is 0.4 (Waring et al. 2012). For both fin and sei whales, these estimates are likely biased low due to the low detection rate for these species. The most recent SAR for the North Atlantic sperm whale stock is from 2007 (covering the years 2001-2005) and during that time period, there were no recorded mortality or serious injury incidents due to entanglements (Waring et al. 2007). PBR for this stock is 7.1 animals per year.

Minke whales are not ESA-listed but are protected under the MMPA, with a minimum population estimate of 6,909 animals for the Canadian east coast stock; however, a population trend analysis has not been conducted for this stock (Waring et al. 2012). The minimum rate of annual human-caused mortality and serious injury averaged 5.9 per year during 2005 to 2009, and of these, 3.5 animals per year were recorded through observed fisheries and 0.8 per year were attributed to U.S. fisheries using stranding and entanglement data (Waring et al. 2012). PBR for this stock is 69 animals per year.

More details on fisheries interactions with these species, as well as management actions in place to reduce entanglement risk, can be found in Section 6.4.4.

6.4.2.3 Small Cetaceans

There is fishing related mortality of numerous small cetacean species (dolphins, pilot whales, and harbor porpoises) associated with Northeast Multispecies fishing gear. Seasonal abundance and distribution of each species off the coast of the Northeast U.S. varies with respect to life history characteristics. Some species such as white-sided dolphins and harbor porpoises primarily occupy continental shelf waters. Other species such as the Risso's dolphin occur primarily in continental shelf edge and slope waters. Still other species like the common dolphin and the spotted dolphin occupy all three habitats. Waring et al. (2012) summarizes information on the distribution and geographic range of western North Atlantic stocks of each species.

The most commonly observed small cetaceans recorded as bycatch in multispecies fishing gear (e.g., gillnets and trawls) are harbor porpoises, white-sided dolphins, common dolphins, and pilot whales. These species are described in a bit more detail here. Harbor porpoises are found seasonally within New England and Mid-Atlantic waters. In the Mid-Atlantic, porpoises are present in the winter/spring (typically January through April) and in southern New England waters from December through May. In the Gulf of Maine, porpoises occur largely from the fall through the spring (September through May) and in the summer are found in northern Maine and through the Bay of Fundy and Nova Scotia area. White-sided dolphin distribution shifts seasonally, with a large presence from Georges Bank through the Gulf of Maine from June through September, with intermediate presence from Georges Bank through the lower Gulf of Maine from October through December. Low numbers are present from Georges Bank to Jeffrey's Ledge from January through May (Waring et al. 2012). Common dolphins are widely distributed over the continental shelf from Maine through Cape Hatteras, North Carolina. From mid- January to May they are dispersed from North Carolina through Georges Bank, and then move onto Georges Bank and the Scotia shelf from the summer to fall. They are occasionally found in the Gulf of Maine (Waring et al. 2012). Pilot whales are generally distributed along the continental shelf edge off the northeastern U.S. coast in the winter and early spring. In late spring, the move onto Georges Bank and into the Gulf of Maine and remain until late fall. They do occur along the Mid-Atlantic shelf break between Cape Hatteras, North Carolina and New Jersey (Waring et al. 2012). Since pilot whales are difficult to differentiate at sea, they are generally considered *Globicephala* sp. when they are recorded at sea (Waring et al. 2012).

6.4.2.4 Pinnipeds

Harbor seals have the most extensive distribution of the four species of seal expected to occur in the area. Harbor seals sighting have occurred far south as 30° N (Katona et al. 1993, Waring et al. 2012). Their approximate year-round range extends from Nova Scotia, through the Bay of Fundy, and south through Maine to northern Massachusetts (Waring et al. 2012). Their more seasonal range (September through May) extends from northern Massachusetts south through southern New Jersey, and stranding records indicate occasional presence of harbor seals from southern New Jersey through northern North Carolina (Waring et al. 2012). Gray seals are the second most common seal species in U.S. EEZ waters. They occur from Nova Scotia through the Bay of Fundy and into waters off of New England (Katona et al. 1993; Waring et al. 2011) year-round from Maine through southern Massachusetts (Waring et al. 2012). A more seasonal distribution of gray seals occurs from southern Massachusetts through southern New Jersey from September through May. Similar to harbor seals, occasional presence from southern New Jersey through northern North Carolina indicate occasional presence of gray seals in this region (Waring et al. 2012). Pupping for both species occurs in both U.S. and Canadian waters of the western North Atlantic. The majority of harbor seal pupping is thought to occur in U.S. waters. While there are at least three gray seal pupping colonies in U.S., the majority of gray seal pupping likely occurs in Canadian waters. Observations of harp and hooded seals are less common in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring. They then travel to more northern latitudes for molting and summer feeding (Waring et al. 2006). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch information (Waring et al. 2012).

6.4.2.5 Atlantic Sturgeon

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 (Holland and Yelverton 1973, Dovel and Berggen 1983, Waldman et al. 1996, Kynard and Horgan 2002, Dadswell 2006, ASSRT 2007). Tracking and tagging studies have shown that subadult and adult Atlantic sturgeon that originate from different rivers mix within the marine environment, utilizing ocean and estuarine waters for life functions such as foraging and overwintering (Stein et al. 2004a, Dadswell 2006, ASSRT 2007, Laney et al. 2007, Dunton et al. 2010). Fishery-dependent data as well as fishery-independent data demonstrate that Atlantic sturgeon use relatively shallow inshore areas of the continental shelf; primarily waters less than 50 m (Stein et al. 2004b, ASMFC 2007, Dunton et al. 2010). The data also suggest regional differences in Atlantic sturgeon depth distribution with sturgeon observed in waters primarily less than 20 m in the Mid-Atlantic Bight and in deeper waters in the Gulf of Maine (Stein et al. 2004b, ASMFC 2007, Dunton et al. 2010). Information on population sizes for each Atlantic sturgeon DPS is very limited. Based on the best available information, NMFS has concluded that bycatch, vessel strikes, water quality and water availability, dams, lack of regulatory mechanisms for protecting the fish, and dredging are the most significant threats to Atlantic sturgeon.

Comprehensive information on current abundance of Atlantic sturgeon is lacking for all of the spawning rivers (ASSRT 2007). Based on data through 1998, an estimate of 863 spawning adults per year was developed for the Hudson River (Kahnle *et al*. 2007), and an estimate of 343 spawning adults per year is available for the Altamaha River, GA, based on data collected in 2004-2005 (Schueller and Peterson 2006). Data collected from the Hudson River and Altamaha River studies cannot be used to estimate the total number of adults in either subpopulation, since mature Atlantic sturgeon may not spawn every year, and it is unclear to what extent mature fish in a non-spawning condition occur on the spawning grounds. Nevertheless, since the Hudson and Altamaha Rivers are presumed to have the healthiest Atlantic sturgeon subpopulations within the United States, other U.S. subpopulations are predicted to have fewer spawning adults than either the Hudson or the Altamaha (ASSRT 2007). It is also important to note that the estimates above represent only a fraction of the total population size as spawning adults comprise only a portion of the total population (e.g., this estimate does not include subadults and early life stages).

6.4.3 Species and Habitats Not Likely to be Affected

NMFS has determined that the action being considered in this EA is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. Further, the action considered in this EA is not likely to adversely affect North Atlantic right whale (discussed in Section 6.4.2.2) critical habitat. The following discussion provides the rationale for these determinations.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. They occupy rivers along the western Atlantic coast from St. Johns River in Florida, to the Saint John River in New Brunswick, Canada. Although, the species is possibly extirpated from the Saint Johns River system. The species is anadromous in the southern portion of its range (i.e., south of Chesapeake Bay), while some northern populations are amphidromous (NMFS 1998). Since sectors would not operate in or near the rivers where concentrations of shortnose sturgeon are most likely found, it is highly unlikely that sectors would affect shortnose sturgeon.

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Juvenile salmon in New England rivers typically migrate to sea in spring after a one- to three-year period of development in freshwater streams. They remain at sea for two winters before returning to their U.S. natal rivers to spawn (Kocik and Sheehan 2006). Results from a 2001-2003 post-smolt trawl survey in the nearshore waters of the Gulf of Maine indicate that Atlantic salmon post-smolts are prevalent in the upper water column throughout this area in mid to late May (Lacroix, Knox, and Stokesbury 2005). Therefore, commercial fisheries deploying small-mesh active gear (pelagic trawls and purse seines within 10 m of the surface) in nearshore waters of the Gulf of Maine may have the potential to incidentally take smolts. However, it is highly unlikely that the action being considered will affect the Gulf of Maine DPS of Atlantic salmon given that operation of the multispecies fishery does not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found. Additionally, multispecies gear operates in the ocean at or near the bottom rather than near the surface where Atlantic salmon are likely to occur. Thus, this species will not be considered further in this EA.

North Atlantic right whales occur in coastal and shelf waters in the western North Atlantic (NMFS 2005). Section 6.4.4 discusses potential fishery entanglement and mortality interactions with North Atlantic right whale individuals. The western North Atlantic population in the U.S. primarily ranges from winter calving and nursery areas in coastal waters off the southeastern U.S. to summer feeding grounds in New England waters (NMFS 2005). North Atlantic Right Whales use five well-known habitats annually, including multiple in northern waters. These northern areas include the Great South Channel (east of Cape Cod); Cape Cod and Massachusetts Bays; the Bay of Fundy; and Browns and Baccaro Banks, south of Nova Scotia. NMFS designated the Great South Channel and Cape Cod and Massachusetts Bays as Northern Atlantic right whale critical habitat in June 1994 (59 FR 28793). NMFS has designated additional critical habitat in the southeastern U.S. Multispecies gear operates in the ocean at or near the bottom rather than near the surface. It is not known whether the bottom-trawl, or any other type of fishing gear, has an impact on the habitat of the Northern right whale (59 FR 28793). As discussed in the FY 2010 and FY 2011 sector EAs and further in Section 5.1, sectors would result in a negligible effect on physical habitat. Therefore, FY 2013 sector operations would not result in a significant impact on Northern right whale critical habitat. Further, mesh sizes used in the multispecies fishery do not significantly impact the Northern right whale's planktonic food supply (59 FR 28793). Therefore, Northern right whale food sources in areas designated as critical habitat would not be adversely affected by sectors. For these reasons, Northern right whale critical habitat will not be considered further in this EA.

The hawksbill turtle is uncommon in the waters of the continental U.S. Hawksbills prefer coral reefs, such as those found in the Caribbean and Central America. Hawksbills feed primarily on a wide variety of sponges, but also consume bryozoans, coelenterates, and mollusks. The Culebra Archipelago of Puerto Rico contains especially important foraging habitat for hawksbills. Nesting areas in the western North Atlantic include Puerto Rico and the Virgin Islands. There are accounts of hawksbills in south Florida and individuals have been sighted along the east coast as far north as Massachusetts; however, east coast sightings north of Florida are rare (NMFS 2009a).

Blue whales do not regularly occur in waters of the U.S. EEZ (Waring et al. 2002). In the North Atlantic region, blue whales are most frequently sighted from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program surveys of the mid- and North

Atlantic areas of the outer continental shelf (Cetacean and Turtle Assessment Program 1982). Calving for the species occurs in low latitude waters outside of the area where the sectors would operate. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. There were no observed fishery-related mortalities or serious injuries to blue whales between 1996 and 2000 (Waring et al. 2002). The species is unlikely to occur in areas where the sectors would operate, and sector operations would not affect the availability of blue whale prey or areas where calving and nursing of young occurs. Therefore, the Preferred Alternatives would not be likely to adversely affect blue whales.

Unlike blue whales, sperm whales do regularly occur in waters of the U.S. EEZ. However, the distribution of the sperm whales in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2007). Sperm whale distribution is typically concentrated east-northeast of Cape Hatteras in winter and shifts northward in spring when whales are found throughout the Mid-Atlantic Bight (Waring et al. 2006). Distribution extends further northward to areas north of Georges Bank and the Northeast Channel region in summer and then south of New England in fall, back to the Mid-Atlantic Bight (Waring et al. 1999). In contrast, the sectors would operate in continental shelf waters. The average depth over which sperm whale sightings occurred during the Cetacean and Turtle Assessment Program surveys was 5,879 ft (1,792 m) (Cetacean and Turtle Assessment Program 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 3,280 ft (1,000 m) and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin et al. 2002). There were no observed fishery-related mortalities or serious injuries to sperm whales between 2001 and 2005 (Waring et al. 2007). Sperm whales are unlikely to occur in water depths where the sectors would operate, sector operations would not affect the availability of sperm whale prey or areas where calving and nursing of young occurs. Therefore, the Proposed Action would not be likely to adversely affect sperm whales.

Although marine turtles and large whales could be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery, and therefore the FY 2011 sectors, would not have any adverse effects on the availability of prey for these species. Sea turtles feed on a variety of plants and animals, depending on the species. However, none of the turtle species are known to feed upon groundfish. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The multispecies fishery will not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that will pass through multispecies fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish such as sand lance, herring and mackerel (Aguilar 2002, Clapham 2002). Multispecies fishing gear operates on or very near the bottom. Fish species caught in multispecies gear are species that live in benthic habitat (on or very near the bottom) such as flounders. As a result, this gear does not typically catch schooling fish such as herring and mackerel that occur within the water column. Therefore, the continued authorization of the multispecies fishery or the approval of the FY 2013 sector operations plans will not affect the availability of prey for foraging humpback or fin whales.

6.4.4 Interactions between Gear and Protected Resources

Marine Mammals

NMFS categorizes commercial fisheries based on a two-tiered, stock-specific fishery classification system that addresses both the total impact of all fisheries on each marine mammal stock as well as the impact of individual fisheries on each marine mammal stock. NMFS bases the system on the numbers of animals per year that incur incidental mortality or serious injury due to commercial fishing operations relative to a marine mammal stock's PBR level. Tier 1 takes into account the cumulative mortality and serious injury to marine mammals caused by commercial fisheries. Tier 2 considers marine mammal mortality and serious injury caused by the individual fisheries. This EA uses Tier 2 classifications to indicate how each type of gear proposed for use in the Proposed Action may affect marine mammals (NMFS 2009b). Table 14 identifies the classifications used in the final List of Fisheries (for FY 2012 (76 FR 73912; November 29, 2011; NMFS 2011), which are broken down into Tier 2 Categories I, II, and III.

Table 14 – Descriptions of the Tier 2 Fishery Classification Categories (50 CFR 229.2)

Category	Category Description
Category I	A commercial fishery that has frequent incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is, by itself, responsible for the annual removal of 50 percent or more of any stock's PBR level.
Category II	A commercial fishery that has occasional incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 percent and 50 percent, exclusive of any stock's PBR.
Category III	A commercial fishery that has a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that collectively with other fisheries is responsible for the annual removal of: a. Less than 50 percent of any marine mammal stock's PBR level, or b. More than 1 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator would determine whether the incidental serious injury or mortality is "remote" by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator.

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve inadvertent interactions with fishing gear when the fishermen deploy gear in areas used by protected resources. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by the multispecies fishery through the year. Many large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer. However they are also relatively abundant during the fall and would have a higher potential for interaction with sector activities that occur during these seasons. Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents. Therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during these seasons.

Although interactions between protected species and gear deployed by the Northeast Multispecies fishery would vary, interactions generally include:

- becoming caught on hooks (bottom longlines)
- entanglement in mesh (gillnets and trawls)
- entanglement in the float line (gillnets and trawls)
- entanglement in the groundline (traps/pots, gillnets, trawls, and bottom longlines)
- entanglement in anchor lines (gillnets and bottom longlines), or
- entanglement in the vertical lines that connect gear to the surface and surface systems (gillnets, traps/pots, and bottom longlines).

NMFS assumes the potential for entanglements to occur is higher in areas where more gear is set and in areas with higher concentrations of protected species.

Table 15 lists the marine mammals known to have had interactions with gear used by the Northeast multispecies fishery. This gear includes sink gillnets, traps/pots, bottom trawls, and bottom longlines within the Northeast multispecies region, as excerpted from the List of Fisheries for FY 2012 ([76 FR 73912; November 29, 2011], also see Waring et al. 2012). Sink gillnets have the greatest potential for interaction with protected resources, followed by bottom trawls. There are no observed reports of interactions between groundfish bottom longline gear and marine mammals in FY 2009 through FY 2011. However, interactions between the pelagic longline fishery and both pilot whales and Risso's dolphins led to the development of the Pelagic Longline Take Reduction Plan.

Table 15 - Marine Mammal Species and Stocks Incidentally Killed or Injured Based on Northeast Multispecies Fishing Areas and Gear Types (based on 2012 List of Fisheries)

Fishery		**Estimated Number of Vessels/Person**	**Marine Mammal Species and Stocks Incidentally Killed or Injured**
Category	Type		
Category I	Mid-Atlantic gillnet	6,402	Bottlenose dolphin, Northern Migratory coastal [a] Bottlenose dolphin, Southern Migratory coastal [a] Bottlenose dolphin, Northern NC estuarine system [a] Bottlenose dolphin, Southern NC estuarine system [a] Bottlenose dolphin, WNA offshore Common dolphin, WNA Gray seal, WNA Harbor porpoise, GOM/Bay of Fundy Harbor seal, WNA Harp seal, WNA Humpback whale, Gulf of Maine Long-finned pilot whale, WNA Minke whale, Canadian east coast Short-finned pilot whale, WNA White-sided dolphin, WNA
	Northeast sink gillnet	3,828	Bottlenose dolphin, WNA, offshore Common dolphin, WNA Fin whale, WNA Gray seal, WNA Harbor porpoise, GOM/Bay of Fundy Harbor seal, WNA Harp seal, WNA Hooded seal, WNA Humpback whale, GOM Minke whale, Canadian east coast North Atlantic right whale, WNA Risso's dolphin, WNA White-sided dolphin, WNA
Category II	Mid-Atlantic bottom trawl	1,388	Bottlenose dolphin, WNA offshore

			Common dolphin, WNA [a] Long-finned pilot whale, WNA [a] Risso's dolphin, WNA Short-finned pilot whale, WNA [a] White-sided dolphin, WNA
	Northeast bottom trawl	2,584	Common dolphin, WNA Harbor porpoise, GOM/ Bay of Fundy Harbor seal, WNA Harp seal, WNA Long-finned pilot whale, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA [a]
	Atlantic mixed species trap/pot [c]	3,526	Fin whale, WNA Humpback whale, GOM
Category III	Northeast/Mid-Atlantic bottom longline/hook-and-line	>1,281	None documented in recent years

Notes:
[a] Fishery classified based on serious injuries and mortalities of this stock, which are greater than 50 percent (Category I) or greater than 1 percent and less than 50 percent (Category II) of the stock's PBR.

Table 16 shows trends in marine mammal and ESA listed species takes from FY 2009 to FY 2011 (fishing years as opposed to calendar years) as recorded in the ASM and observer program data. This data comes from trips that were potentially using sector ACE.

Table 16 - Marine Mammal and ESA listed Species Takes by Gear as Recorded in ASM and Observer Program Universe: Trips Potentially Using Sector ACE in FY 2009 - FY 2011 (Data as of: October 18, 2012)

Gear Name	Species Category	Common Name	Scientific Name	2009 Takes	2010 Takes	2011 Takes
GILL NET, DRIFT-SINK, FISH	pinniped	SEAL, HARBOR	PHOCA VITULINA CONCOLOR	2	0	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	PORPOISE, HARBOR	PHOCOENA PHOCOENA	18	31	10
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	PORPOISE/DOLPHIN, NK	PHOCOENIDAE/DELPHINIDAE	0	0	2
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	DOLPHIN, NK (MAMMAL)	DELPHINIDAE	0	0	1
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	DOLPHIN, WHITESIDED	LAGENORHYNCHUS ACUTUS	1	1	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	DOLPHIN,COMMON (OLD SADDLEBACK)	DELPHINUS DELPHIS (COMMON)	1	1	2
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	MARINE MAMMAL, NK	CETACEA/PINNIPEDIA	0	1	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	cetacean	WHALE, PILOT, NK	GLOBICEPHALA SP	0	1	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	pinniped	SEAL, HARBOR	PHOCA VITULINA CONCOLOR	27	4	30
GILL NET, FIXED OR ANCHORED,SINK, OTHER	pinniped	SEAL, NK	PHOCIDAE	9	9	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	pinniped	SEAL, GRAY	HALICHOERUS GRYPUS	52	41	53
GILL NET, FIXED OR ANCHORED,SINK, OTHER	pinniped	SEAL, HARP	PHOCA GROENLANDICA	2	1	0
GILL NET, FIXED OR ANCHORED,SINK, OTHER	Turtle	TURTLE, NK HARD-SHELL	CHELONIIDAE	1	0	1
TRAWL,OTTER,BOTTOM,FISH	Cetacean	DOLPHIN, WHITESIDED	LAGENORHYNCHUS ACUTUS	9	35	9
TRAWL,OTTER,BOTTOM,FISH	Cetacean	DOLPHIN, NK (MAMMAL)	DELPHINIDAE	0	0	5
TRAWL,OTTER,BOTTOM,FISH	Cetacean	PORPOISE, HARBOR	PHOCOENA PHOCOENA	0	1	4
TRAWL,OTTER,BOTTOM,FISH	Cetacean	WHALE, PILOT, NK	GLOBICEPHALA SP	3	6	2
TRAWL,OTTER,BOTTOM,FISH	Cetacean	DOLPHIN,COMMON (OLD SADDLEBACK)	DELPHINUS DELPHIS (COMMON)	3	6	4
TRAWL,OTTER,BOTTOM,FISH	Cetacean	DOLPHIN, RISSOS	GRAMPUS GRISEUS	1	0	0

TRAWL,OTTER,BOTTOM,FISH	Cetacean	WHALE, NK	CETACEA, WHALE	0	0	1
TRAWL,OTTER,BOTTOM,FISH	pinniped	SEAL, HARBOR	PHOCA VITULINA CONCOLOR	0	3	0
TRAWL,OTTER,BOTTOM,FISH	pinniped	SEAL, GRAY	HALICHOERUS GRYPUS	5	2	5
TRAWL,OTTER,BOTTOM,FISH	Turtle	TURTLE, LOGGERHEAD	CARETTA CARETTA	1	0	2
TRAWL,OTTER,BOTTOM,FISH	Turtle	TURTLE, LEATHERBACK	DERMOCHELYS CORIACEA	0	1	0
TRAWL,OTTER,BOTTOM,HADDOCK SEPARATOR	cetacean	DOLPHIN,COMMON (OLD SADDLEBACK)	DELPHINUS DELPHIS (COMMON)	0	2	6
TRAWL,OTTER,BOTTOM,HADDOCK SEPARATOR	cetacean	WHALE, PILOT, NK	GLOBICEPHALA SP	1	1	1
TRAWL,OTTER,BOTTOM,HADDOCK SEPARATOR	pinniped	SEAL, GRAY	HALICHOERUS GRYPUS	0	0	1
TRAWL,OTTER,BOTTOM,RUHLE	cetacean	WHALE, PILOT, NK	GLOBICEPHALA SP	2	0	0
TRAWL,OTTER,BOTTOM,RUHLE	cetacean	DOLPHIN, WHITESIDED	LAGENORHYNCHUS ACUTUS	0	1	0
TRAWL,OTTER,BOTTOM,RUHLE	cetacean	DOLPHIN,COMMON (OLD SADDLEBACK)	DELPHINUS DELPHIS (COMMON)	1	0	0
TRAWL,OTTER,BOTTOM,RUHLE	pinniped	SEAL, GRAY	HALICHOERUS GRYPUS	0	0	1

Marine mammals are taken in gillnets, trawls, and trap/pot gear used in the Northeast Multispecies area. Documented marine mammal interactions in Northeast sink gillnet and Mid- Atlantic gillnet fisheries include harbor porpoise, white-sided dolphin, harbor seal, gray seal, harp seal, hooded seal, pilot whale, bottlenose dolphin (various stocks), Risso's dolphin, and common dolphin. Table 17 and Table 18 summarize the estimated mean annual mortality of small cetaceans and seals that are taken in the Northeast sink gillnet and Mid-Atlantic gillnet fisheries according to the most recent SAR for each particular species.

Documented marine mammal interactions with Northeast and Mid-Atlantic bottom trawl fisheries include minke whale, harbor porpoise, white-sided dolphin, harbor seal, gray seal, harp seal, pilot whale, and common dolphin. Table 19 and Table 20 provide the estimated mean annual mortality of small cetaceans and seals that are taken in the Northeast and Mid-Atlantic bottom trawl fisheries, based on the most recent SAR for each particular species. The data in these tables are based on takes observed by fishery observers as part of the Northeast Fisheries Observer Program (NEFOP).

Table 17 - Estimated Marine Mammals Mortalities in the Northeast Sink Gillnet Fishery

Species	**Years Observed**	**Mean Annual Mortality (CV)**	**Total PBR**
Harbor porpoise	05-09	559 (0.16)	701
Atlantic white-sided dolphin	05-09	36 (0.34)	190
Common dolphin (short-	05-09	26 (0.39)	1,000
Risso's dolphin	05-09	3 (0.93)	124
Western North Atlantic Offshore bottlenose dolphin	02-06	Unknown+	566
Harbor seal	05-09	332 (0.14)	Undetermined
Gray seal	05-09	678 (0.14)	Undetermined
Harp seal	05-09	174 (0.18)	Unknown
Hooded seal	01-05	25 (0.82)	Unknown

Source: Waring et al. (2009, 2012)

+While there have been documented interactions between the Western North Atlantic Offshore bottlenose dolphin stock and the Northeast sink gillnet fishery during the five year time period, estimates of bycatch mortality in the fishery have not been generated.

Table 18 - Estimated Marine Mammal Mortalities in the Mid-Atlantic Gillnet Fishery

Species	Years Observed	Mean Annual Mortality (CV)	Total PBR
Harbor porpoise	05-09	318 (0.26)	701
Common dolphin (short-beaked)	05-09	2.2 (1.03)	1,000
Risso's dolphin	05-09	7 (0.73)	124
Bottlenose dolphin	06-08		
Western North Atlantic Northern Migratory Coastal stock		5.27 (0.19) min; 6.02 (0.19) max	71
Western North Atlantic Southern Migratory Coastal stock	06-08	5.71 (0/31 min; 41.91 (0.14) max	96
Northern North Carolina Estuarine System stock	06-08	2.39 (0.25) min; 18.99 (0.11) max	Undetermined
Southern North Carolina Estuarine System stock	06-08	0.61 (0.30) min; 0.92 (0.21) max	16
Western North Atlantic Offshore stock	02-06	Unknown+	566
Harbor seal	05-09	45 (0.39)	Undetermined
Harp seal	05-09	57 (0.5)	Unknown

Source: Waring et al. (2009, 2012)

+While there have been documented interactions between the Western North Atlantic Offshore bottlenose dolphin stock and the Mid-Atlantic gillnet fishery during the five year time period, estimates of bycatch mortality in the fishery have not been generated.

Table 19 - Estimated Marine Mammal Mortalities in the Northeast Bottom Trawl Fishery

Species	Years Observed	Mean Annual Mortality (CV)	Total PBR
Minke whale	05-09	3.5 (0.34)	69
Harbor porpoise	05-09	6 (0.22)	701
Atlantic white-sided dolphin	05-09	160 (0.14)	190
Common dolphin (short-beaked)	05-09	23 (0.13)	1,000
Pilot whales*	05-09	12 (0.14)	93 (long-finned); 172 (short-finned)
Harbor seal	05-09	Unknown+	Undetermined
Gray seal	05-09	Unknown+	Undetermined
Harp seal	05-09	Unknown+	Unknown

Source: Waring et al. (2012)

*Total fishery-related serious injuries and mortalities to pilot whales (*Globicephala* sp.) cannot be differentiated to species due to uncertainty in species identification by fishery observers (Waring et al. 2012). However, separate PBRs have been calculated for long-finned and short-finned pilot whales.

+While there have been documented interactions between these species and the Northeast bottom trawl fishery during the five year time period, estimates of bycatch mortality in the fishery have not been generated.

Table 20 - Estimated Marine Mammal Mortalities in the Mid-Atlantic Bottom Trawl Fishery

Species	Years Observed	Mean Annual Mortality (CV)	Total PBR
Atlantic white-sided dolphin	05-09	23 (0.12)	190
Common dolphin (short-beaked)	05-09	110 (0.13)	1,000
Pilot whales*	05-09	30 (0.16)	93 (long-finned); 172 (short-finned)

Source: Waring et al. (2012)

*Total fishery-related serious injuries and mortalities to pilot whales (*Globicephala* sp.) cannot be differentiated to species due to uncertainty in species identification by fishery observers (Waring et al. 2012). However, separate PBRs have been calculated for long-finned and short-finned pilot whales.

Takes of large whales are typically not documented within observer records as large whales are typically entangled in fixed fishing gear and the chances of observing an interaction are small. Although large whales can become anchored in gear, they more often swim off with portions of the fishing gear; therefore, documentation of their incidental take is based primarily on the observation of gear or markings on whale carcasses, or on whales entangled and observed at-sea. Even if a whale is anchored in fishing gear, it is extremely difficult to make any inferences about the nature of the entanglement event and initial interaction between the whale and the gear. Frequently, it is difficult to attribute a specific gear type to an entangled animal based on observed scars or portions of gear remaining attached to whales or their carcasses; however, gillnet gear has been identified on entangled North Atlantic right whales, humpback whales, fin whales, and minke whales. Minke whales have been observed to be taken in the Northeast bottom trawl fishery by fishery observers. The annual estimated mortality and serious injury to minke whales from this fishery was 3.5 (CV = 0.34) between 2005 and 2009 (Waring et al. 2012). At this time, there is no evidence suggesting that other large whale species interact with trawl gear fisheries.

A number of marine mammal management plans are in place along the U.S. east coast to reduce serious injuries and deaths of marine mammals due to interactions with commercial fishing gear. Multispecies fishing vessels are required to adhere to measures in the Atlantic Large Whale Take Reduction Plan (ALWTRP), which manages from Maine through Florida, to minimize potential impacts to certain cetaceans. The ALWTRP was developed to address entanglement risk to right, humpback, and fin whales, and to acknowledge benefits to minke whales in specific Category I or II commercial fishing efforts that utilize traps/pots and gillnets. This includes the Northeast sink gillnet and Mid-Atlantic gillnet fisheries. The ALWTRP calls for the use of gear markings, area restrictions, weak links, and sinking groundline. Fishing vessels would be required to comply with the ALWTRP in all areas where gillnets were used.

Fishing vessels would also be required to comply, where applicable, with the seasonal gillnet requirements of the Bottlenose Dolphin Take Reduction Plan (BDTRP), which manages coastal waters from New Jersey through Florida, and Harbor Porpoise Take Reduction Plan (HPTRP), which manages coastal and offshore waters from Maine through North Carolina. The BDTRP spatially and temporally restricts night time use of gillnets and requires net tending in the Mid- Atlantic gillnet region. The HPTRP aims to reduce interactions between harbor porpoises and gillnets in the Gulf of Maine, southern New England, and Mid-Atlantic regions. In New England waters, the HPTRP implements seasonal area closures and the seasonal use of pingers (acoustic devices that emit a sound) to deter harbor porpoises from approaching the nets. In Mid-Atlantic waters, the HPTRP implements seasonal area closures and the seasonal use of gear modifications for large mesh (7-18 in) and small mesh (<5 to >7 in) gillnets to reduce harbor porpoise bycatch.

An Atlantic Trawl Gear Take Reduction Team was formed in 2006 to address the bycatch of white-sided and common dolphins and pilot whales in Northeast and Mid-Atlantic trawl gear fisheries. While a take reduction plan with regulatory measures was not implemented (bycatch levels were not exceeding allowable thresholds under the MMPA), a take reduction strategy was developed that recommends voluntary measures to be used to reduce the chances for interactions between trawl gear and these marine mammal species. The two voluntary measures that were recommended are: 1) reducing the number of turns made by the fishing vessel and tow times while fishing at night; and 2) increasing radio communications between vessels about the presence and/or incidental capture of a marine mammal to alert other fishermen of the potential for additional interactions in the area.

Sea Turtles

Sea turtles have been caught and injured or killed in multiple types of fishing gear, including gillnets, trawls, and hook and line gear. However, impact due to inadvertent interaction with trawl gear is almost twice as likely to occur when compared with other gear types (NMFS 2009d). Interaction with trawl gear is more detrimental to sea turtles as they can be caught within the trawl itself and will drown after extended periods underwater. A study conducted in the Mid- Atlantic region showed that bottom trawling accounts for an average annual take of 616 loggerhead sea turtles, although Kemp's ridleys and leatherbacks were also caught during the study period (Murray 2006). Impacts to sea turtles would likely still occur under the Proposed Action even though sea turtles generally occur in more temperate waters than those in the Northeast Multispecies area.

Atlantic Sturgeon

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 were 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). In a review of the Northeast Fishery Observer Program (NEFOP) database for the years 2001-2006, observed bycatch of Atlantic sturgeon was used to calculate bycatch rates that were then applied to commercial fishing effort to estimate overall bycatch of Atlantic sturgeon in commercial fisheries. This review indicated sturgeon bycatch occurred in statistical areas abutting the coast from Massachusetts (statistical area 514) to North Carolina (statistical area 635) (ASMFC TC 2007). Based on the available data, participants in an ASMFC bycatch workshop concluded that sturgeon encounters tended to occur in waters less than 50 m throughout the year, although seasonal patterns exist (ASMFC TC 2007). The ASMFC analysis determined 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), based on a review of the NMFS Observer Database from 1989-2000, found clinal variation in the bycatch rate of sturgeon in sink gillnet gear with lowest rates occurring off of Maine and highest rates off of North Carolina for all months of the year.

In an updated, preliminary analysis, the Northeast Fisheries Science Center (NEFSC) was able to use data from the NEFOP database to provide updated estimates for the 2006 to 2010 timeframe. Data were limited by observer coverage to waters outside the coastal boundary (fzone>0) and north of Cape Hatteras, NC. Sturgeon included in the data set were those identified by federal observers as Atlantic sturgeon, as well as those categorized as unknown sturgeon.

The preliminary analysis apportioned the estimated total sturgeon takes to specific fishery management plans. The analysis estimates that between 2006 and 2010, a total of 15,587 Atlantic sturgeon were captured and discarded in bottom otter trawl (7,740 sturgeon) and sink gillnet (7,848 sturgeon) gear. The analysis results indicate that 7.1% (550 sturgeon) of sturgeon discards in bottom otter trawl gear could be attributed to the large mesh groundfish bottom trawl fisheries if a correlation of FMP species landings (by weight) was used as a proxy for fishing effort. Additionally, the analysis results indicate that 4.0% (314 sturgeon) of sturgeon discards in sink gillnet gear could be attributed to the large mesh groundfish gillnet fisheries if a correlation of FMP species landings (by weight) was used as a proxy for fishing effort.

These additional data support the conclusion from the earlier bycatch estimates that the multispecies fishery may interact with Atlantic sturgeon. Since the Atlantic sturgeon DPSs have been listed as endangered and threatened under the ESA, the ESA Section 7 consultation for the multispecies fishery will be reinitiated, and additional evaluation will be included in the resulting Biological Opinion to describe any impacts of the fisheries on Atlantic sturgeon and define any measures needed to mitigate those impacts, if necessary. It is anticipated that any measures, terms and conditions included in an updated Biological Opinion will further reduce impacts to the species.

On February 6, 2012, NMFS issued two final rules (77 FR 5880-5912; 77 FR 5914-5982) listing five Distinct Population Segments (OPS) of Atlantic sturgeon as threatened or endangered. Four DPSs (New York Bight, Chesapeake Bay, Carolina and South Atlantic) are listed as endangered and one DPS (Gulf of Maine) is listed as threatened. The effective date of the listing is April 6, 2012. Formal consultation under Section 7 of the ESA has been reinitiated and is ongoing for the NE multispecies fishery. The previous October 2010 Biological Opinion (BO) for this fishery concluded that the actions considered would not jeopardize the continued existence of any listed species. This BO will be updated to describe any impacts of the NE multispecies fishery on Atlantic sturgeon DPSs and define any measures needed to reduce those impacts, if necessary. Although interactions between Atlantic sturgeon and the groundfish fishery are likely to occur during the reinitiation period, NMFS determined in an August 28, 2012 memorandum that the amount of interactions is not likely to cause an appreciable reduction in survival and recovery of any of the five DPSs and would not violate ESA sections 7(a)(2) and 7(d).

6.5 Human Communities/Social-Economic Environment

This EA considers and evaluates the effect management alternatives may have on people’s way of life, traditions, and community. These economic and social impacts may be driven by changes in fishery flexibility, opportunity, stability, certainty, safety, and/or other factors. While it is possible that these impacts could be solely experienced by individual fishermen, it is more likely that impacts would be experienced across communities, gear types, and/or vessel size classes. This section reviews the Northeast multispecies fishery and describes the human communities potentially impacted by the Proposed Action. This includes a description of the sector and common pool participants’ groundfish fishing and their homeports. Additional information may be found in the FY2010 and FY2011 fishery performance reports for this fishery by the NEFSC (Kitts et al. 2011; Murphy et al. 2012) and the summary tables for FY2012 by the NERO.

6.5.1 The New England Groundfish Fishery

New England’s fishery has been identified with groundfish fishing both economically and culturally for over 400 years. Broadly described, the Northeast multispecies fishery includes the landing, processing, and distribution of commercially important fish that live on the sea bottom. In the early years, the Northeast multispecies fishery caught primarily cod and haddock. Today, the Northeast Multispecies FMP (large-mesh and small-mesh) includes 13 species of groundfish (Atlantic cod, haddock, pollock, yellowtail flounder, witch flounder, winter flounder, windowpane flounder, American plaice, Atlantic halibut, redfish, ocean pout, white hake, and wolffish) harvested from three geographic areas (Gulf of Maine, Georges Bank, and southern New England/Mid-Atlantic Bight), representing 19 distinct stocks.

Prior to the Industrial Revolution, the groundfish fishery focused primarily on cod. The salt cod industry, which preserved fish by salting while still at sea, supported a hook and line fishery that included hundreds of sailing vessels and shoreside industries including salt mining, ice harvesting, and boat building. Late in the 19th century, the fleet also began to focus on Atlantic halibut, with landings peaking in 1896 at around 4,900 tons (4,445 mt) (NOAA 2007).

From 1900 to 1930, the fleet transitioned to steam powered trawlers and increasingly targeted haddock for delivery to the fresh and frozen fillet markets. With the transition to steam powered trawling, it became possible to exploit the groundfish stocks with increasing efficiency. This increased exploitation resulted in a series of boom and bust fisheries from 1930 to 1960 as the North American fleet targeted previously unexploited stocks, depleted the resource, and then transitioned to new stocks (NOAA 2007).

In the early 1960's, fishing pressure increased with the discovery of haddock, hake, and herring off of Georges Bank and the introduction of foreign factory trawlers. Early in this time period, landings of the principal groundfish (cod, haddock, pollock, hake, and redfish) peaked at about 650,000 tons (589,670 mt). However, by the 1970's, landings decreased sharply to between 200,000 and 300,000 tons (181,437 and 272,155 mt) as the previously virgin GB stocks were exploited (NOAA 2007).

The exclusion of the foreign fishermen by the Fisheries Conservation and Management Act in 1976, coupled with technological advances, government loan programs, and some strong classes of cod and haddock, caused a rapid increase in the number and efficiency of U.S. vessels participating in the Northeast groundfish fishery in the late 1970's. This shift resulted in a temporary increase in domestic groundfish landings; however, overall landings (domestic plus foreign) continued to trend downward from about 200,000 tons (181,437 mt) to about 100,000 tons (90,718 mt) through the mid 1980's (NOAA 2007).

In 1986, the NEFMC implemented the Northeast Multispecies FMP with the goal of rebuilding stocks. Since Amendment 5 in 1994, the multispecies fishery has been administered as a limited access fishery managed through a variety of effort control measures including DAS, area closures, trip limits, minimum size limits, and gear restrictions. Partially in response to those regulations, landings decreased throughout the latter part of the 1980's until reaching a more or less constant level of around 40,000 tons (36,287 mt) annually since the mid 1990's.

In 2004, the final rule implementing Amendment 13 to the Northeast Multispecies FMP allowed for self-selecting groups of limited access groundfish permit holders to form sectors. These sectors developed a legally binding operations plan and operated under an allocation of GB cod. While approved sectors were subject to general requirements specified in Amendment 13, sector members were exempt from DAS and some of the other effort control measures that tended to limit the flexibility of fishermen. The rule authorized implementation of the first sector, the GB Cod Hook Sector. A second sector, the GB Cod Fixed Gear Sector, was authorized in 2006.

Through Amendment 16, the NEFMC sought to rewrite groundfish sector policies with a scheduled implementation date of May 1, 2009. When that implementation date was delayed until FY2010, the NMFS Regional Administrator announced that, in addition to a previously stated 18% reduction in DAS, interim rules would be implemented to reduce fishing mortality during FY2009. These interim measures generally reduced opportunity among groundfish vessels through:

- Differential DAS counting;

- Elimination of the SNE/MA winter flounder SAP;
- Elimination of the state waters winter flounder exemption;
- Revisions to incidental catch allocations; and
- Reduction in some groundfish allocations (NOAA 2009).

In 2007, the Northeast multispecies fishery included 2,515 permits. Of these, about 1,400 were limited access. There were about 660 vessels that actively fished. Those vessels include a range of gear types: hook, bottom longline, gillnet, and trawl (NEFMC 2009a). In FY2009, between 40 and 50 of these vessels were members of the GB Cod Sectors. The passage of Amendment 16, implemented in FY2010, ushered in a new era of sector management in the New England groundfish fishery. Since FY2010, over 50% of eligible northeast groundfish multispecies permits and over 90% of landings history has been associated. The remaining vessels were common pool groundfish fishing vessels.

Amendment 16 to the Northeast Multispecies FMP was implemented for the New England groundfish fishery starting on May 1, 2010, the start of the 2010 fishing year. There were two substantial changes meant to adhere to the catch limit requirements and stock rebuilding deadlines of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSA). The first change developed "hard quota" annual catch limits (ACLs) for all 20 stocks in the groundfish complex. The second change expanded the use of Sectors, which are allocated subdivisions of ACLs called Annual Catch Entitlements (ACE) based on each sector's collective catch history. Sectors received ACE for nine of 13 groundfish species (14 stocks + quotas for Eastern US/Canada cod and haddock; 16 ACEs) in the FMP and became exempt from many of the effort controls previously used to manage the fishery.

During the first year of sector management, 17 sectors operated, each establishing its own rules for using its allocations. Vessels with limited access permits that joined sectors were allocated 98% of the total commercial groundfish sub-ACL, based on their collective level of historical activity in the groundfish fishery. Approximately half (46%) of the limited access groundfish permits opted to remain in the common pool. Common pool vessels act independently of one another, with each vessel constrained by the number of DAS it can fish, by trip limits, and by all of the time and area closures. These restrictions help ensure that the groundfish catch of common pool vessels does not exceed the common pool's portion of the commercial groundfish sub- ACL for all stocks (about 2% for 2010) before the end of the fishing year.

In the second year of sector management, 58% of limited access permits enrolled in one of 16 sectors or one of two lease-only sectors. From 2010 to 2011, the number of groundfish limited access eligibilities belonging to a sector increased by 66, while the number of these permits in the common pool decreased by 85. At the start of FY2011, vessels operating within a sector were allocated about 98% of the total groundfish sub-ACL, based on historical catch levels. Those vessels that opted to remain in the common pool were given access to about 2% of the groundfish sub-ACL based on the historic catch. The same effort controls employed in 2010 were again used in 2011, to ensure the groundfish catch made by common pool vessels did not exceed the common pool's portion of the commercial groundfish sub-ACL.

In FY12, 60% of limited access permits enrolled in sectors. From FY2011 to FY2012, the number of groundfish limited access eligibilities belonging to a sector increased by 22, while the number of these permits in the common pool decreased by 36.

Although some trends in the fishery are a result of management changes made to the fishery in the years prior to Amendment 16, many of these trends reflect the current system of catch share management.

6.5.2 Number of Vessels

The overall trend since the start of sector management has been a decreasing number of vessels with a limited access groundfish permit, with 1,177 in FY2012 (Table 21). Of those vessels, those with revenue from at least one groundfish trip have also declined, with 401 in FY2012. The proportion of vessels affiliated with a sector has increased each year since FY2010. A key aspect of Amendment 16 is the ability of a sector to jointly decide how its ACE will be harvested, through redistribution within a sector and/or transferring ACE between sectors. Because inactive sector vessels may benefit if other sector vessels harvest their allocation, changes in the number of inactive vessels may result from a transfer of allocation and not necessarily vessels exiting the fishery. Since FY2010, 35-37% of the vessels were inactive (no landings). Of these inactive vessels, 64-69% were affiliated with sectors.

Table 21 - Number of vessels by fishing year

	2007	**2008**	**2009**	**2010 (% sector)**	**2011 (%sector)**	**2012 (%sector)**
Vessels with a limited access groundfish permit	1,413	1,410	1,431	1,383 (54%)	1,279 (60%)	1,177 (61%)
... those with revenue from any species	1,082	1,012	916	854 (51%)	776 (57%)	764 (58%)
... those with revenue from at least one groundfish trip	658	611	566	445 (68%)	419 (72%)	401 (76%)
... those with no landings	331	398	515	529 (60%)	503 (66%)	413 (66%)

Note: These numbers exclude groundfish limited access eligibilities held as Confirmation of Permit History (CPH). Starting in 2010, Amendment 16 authorized CPH owners to join sectors and to lease DAS. For purposes of comparison, CPH vessels are not included in the 2010 and 2011 data for either sector or common pool. FY2007-FY2008 data from (Table 9, Kitts, et al. 2011). FY2009-FY2012 data from (Table 9, NERO 2013).

6.5.3 Landings

Total groundfish landings on trips made by vessels possessing a limited access groundfish permit in FY2012 were 46.3M pounds, which is the lowest landings since FY2007 (Table 22). Because only 16 groundfish stocks are limited by sector allocations, it is important to consider the landings of non-groundfish species and groundfish species separately as a means of describing any possible shift in effort to other fisheries. Non-groundfish landings made by limited access vessels increased from 178.1M pounds in FY2010 to 213.8M pounds in FY2011, and remained fairly steady at 212.0M pounds in FY2012. Total landings of all species made by limited access vessels in the Northeast multispecies fishery was ~258.3M pounds in FY2012. This compares to landings ranging from 236.7M - 277.1M pounds in the 2007–2011 fishing years. In FY2012, sector vessels accounted for 68% of all landings, 99% of groundfish landings, and 62% of non-groundfish landings.

Table 22 - Landings in Thousands of Pounds by Year

Fishing Year	Total Landings	Groundfish Landings	Non-Groundfish Landings
2007 Total	259,448	64,004	195,444
2008 Total	277,118	72,162	204,955
2009 Total	258,954	69,775	189,180
2010 Total	236,695	58,622	178,073
Sector	155,529	57,217	98,312
Common Pool	81,166	1,405	79,762
2011 Total	275,507	61,721	213,785
Sector	190,704	61,126	129,578
Common Pool	84,803	596	84,207
2012 Total	258,279	46,296	211,983
Sector	176,488	45,937	130,551
Common Pool	81,791	358	81,433

Notes:

FY2007-FY2008 data from (Table 9, Kitts et al. 2011). FY2009-FY2011 data from (Table 10, Murphy, et al. 2012). FY2012 data from (Table 2, NERO 2013).

Combined, 161M (live) pounds of ACE was allotted to the sectors in FY2011, but only 70M (live) pounds were landed. Of the 16 stocks allocated to sectors, the catch of 7 stocks approached (>80% conversion) the catch limit set by the ACE (Table 23). By comparison, the catch of only five stocks approached the catch limit set by the total allocated ACE in FY2010. The catch of white hake in FY2011 was particularly close to reaching the limit, with 98% of the white hake ACE being realized. As was the case in FY2010, the majority of the unrealized landings in 2011 were caused by a failure to land Georges Bank haddock. Collectively, East and West GB haddock, accounted for 63M pounds (62%) of the uncaught ACE in FY2011.

Discussion of FY12 catch is provided in Section 6.5.3.6.

Table 23 - Annual Catch Entitlement (ACE) and catch (Live lbs.)

	2010			2011		
	Allocated ACE	**Catch**	**% caught**	**Allocated ACE***	**Catch**	**% caught**
Cod, GB East	717,441	562,610	*78%*	**431,334**	**357,578**	***83%***
Cod, GB West	**6,563,099**	**5,492,557**	***84%***	9,604,207	6,727,837	*70%*
Cod, GOM	**9,540,389**	**7,991,172**	***84%***	**11,242,220**	**9,561,153**	***85%***
Haddock, GB East	26,262,695	4,122,910	*16%*	21,122,565	2,336,964	*11%*
Haddock, GB West	62,331,182	13,982,173	*22%*	50,507,974	6,101,400	*12%*
Haddock, GOM	1,761,206	819,069	*47%*	1,796,740	1,061,841	*59%*
Plaice	6,058,149	3,305,950	*55%*	7,084,289	3,587,356	*51%*
Pollock	35,666,741	11,842,969	*33%*	32,350,451	16,297,273	*50%*
Redfish	14,894,618	4,647,978	*31%*	17,369,940	5,951,045	*34%*
White hake	**5,522,677**	**4,687,905**	***85%***	**6,708,641**	**6,598,273**	***98%***
Winter flounder, GB	4,018,496	3,036,352	*76%*	**4,679,039**	**4,241,177**	***91%***
Winter flounder, GOM	293,736	178,183	*61%*	750,606	343,152	*46%*
Witch flounder	**1,824,125**	**1,528,215**	***84%***	2,839,697	2,178,941	*77%*
Yellowtail flounder, CC/GOM	1,608,084	1,268,961	*79%*	**2,185,802**	**1,743,168**	***80%***
Yellowtail flounder, GB	**1,770,451**	**1,625,963**	***92%***	**2,474,662**	**2,176,921**	***88%***
Yellowtail flounder, SNE	517,372	340,662	*66%*	**963,033**	**795,267**	***83%***
Total	179,350,461	65,433,630	*36%*	172,111,201	70,059,346	*41%*

Notes:
*includes FY2010 carryover.
Stocks with > 80% ACE conversion highlighted in bold.
2010 and 2011 data from Murphy et al (Table 37, 2012).

6.5.3.1 Revenue

During the first year of sector management, groundfish revenues from vessels with limited access groundfish permits in FY2010, were $83M (Table 24). This was lower than FY2007 – FY2009 revenues, which had a high of $90M in FY2008. In FY2011, the groundfish revenues from vessels with limited access groundfish permits were $88M, but in FY2012, revenue fell to $$68M. From FY2007 – FY2012, non-groundfish revenues has been much higher, between about $180M to $235M. Non-groundfish revenue from FY2011 and FY2012 was the highest in the time series. Revenues from all species for FY2012 were $2988M, which is within the range of total revenue in the time series. In FY2012, sector vessels accounted for about 69% of all revenue earned by limited access permitted vessels. Sector vessels also earned 99% of revenue from groundfish landings and 59% of non-groundfish revenue.

Table 24 - Revenue in thousands of dollars by fishing year

Fishing Year	Total Revenue	Groundfish Revenue	Non-Groundfish Revenue
2007 Total	$298,246	$89,055	$209,191
2008 Total	$291,479	$90,132	$201,347
2009 Total	$264,755	$83,035	$181,710
2010 Total	$291,975	$82,578	$209,398
Sector	$195,489	$80,530	$114,959
Common Pool	$96,487	$2,048	$94,439
2011 Total	$332,758	$88,202	$234,555
Sector	$228,550	$87,373	$141,177
Common Pool	$94,208	$830	$93,378
2012 Total	$297,867	$68,157	$229,710
Sector	$204,058	$67,530	$136,539
Common Pool	$93,809	$627	$93,181

Notes:

FY07 and FY08 data from (Kitts, et al. 2011). FY08 data deflated by the calendar year 2007 GDP Implicit Price Deflator. FY09-FY12 data from (NERO, 2013). FY09, FY11, and FY12 data deflated by the calendar year 2010 GDP Implicit Price Deflator.

6.5.3.2 ACE Leasing

Starting with allocations in FY2010, each sector was given an initial annual catch entitlement (ACE) determined by the pooled potential sector contribution (PSC) from each vessel joining that sector. A vessel's PSC is a percentage share of the total allocation for each allocated groundfish stock based on that vessel's fishing history. Once a sector roster and associated PSC is set at the beginning of a fishing year, each sector is then able to distribute its ACE among its members. By regulation, ACE is pooled within sectors, however most sectors seem to follow the practice of assigning catch allowances to member vessels based on PSC allocations. This is an important assumption because vessels catching more than their allocation of PSC must have leased additional quota, either as PSC from within the sector or as ACE from another sector.

During FY2010, 282 sector-affiliated vessels had catch that exceeded their individual PSC allocations for at least one stock. These vessels are then assumed to have leased in an additional 22M pounds of ACE and/or PSC with an approximate value of $13.5M. In FY2011, 256 sector-affiliated vessels had catch that exceeded their individual PSC allocations. These vessels are then assumed to have leased in an additional

31M pounds of quota. Although the number of vessels leasing ACE fell by 9% the estimated number of pounds leased was almost 41% greater in FY2011 than in FY2010 (Murphy, et al. 2012).

6.5.3.3 Effort

Some of the proposed benefits of a catch share system of management are the potential efficiency gains associated with increasing operational flexibility (NOAA 2010). Being released from the former effort controls, but being held to ACLs, sector vessels were expected to increase their catch per unit effort by decreasing effort. Between 2009 andFY2010, the number of groundfish fishing trips[5] and total days absent on groundfish trips declined by 48% and 27%, respectively (Table 25).[6] During the second year of sector management, 2011, the number of groundfish fishing trips and total days absent on groundfish trips increased, and the numbers remained fairly steady for FY2012. While the number of groundfish fishing trips and total days absent on groundfish trips has increased, the number of non-groundfish trips, and days absent on non-groundfish trips, has decreased. Average trip length on both groundfish and non-groundfish trips were not statistically different during the time series.

Table 25 - Effort by active vessels

	2009	2010			2011			2012		
		Total	Sector	Common Pool	Total	Sector	Common Pool	Total	Sector	Common Pool
Number of trips										
groundfish	26,056	13,441	11,159	2,282	15,929	13,642	2,287	14,496	12,943	1,553
non-groundfish	39,943	41,753	16,791	24,962	36,386	17,002	19,384	32,523	17,090	15,433
Number of days absent on trips										
groundfish	24,237	17,614	16,057	1,558	20,724	19,227	1,498	19,557	581	976
non-groundfish	31,241	31,552	15,446	16,106	27,913	14,973	12,940	27,474	15,317	12,157
Average trip length										
groundfish	0.94	1.31	1.44	0.69	1.30	1.41	0.66	1.35	1.414	0.63
(std. dev.)	(1.85)	(2.08)	(2.23)	(0.76)	(2.14)	(2.28)	(0.66)	(2.17)	(2.27)	(0.63)
non-groundfish	0.84	0.79	0.96	0.68	0.80	0.93	0.69	0.88	0.93	0.83
(std. dev.)	(1.57)	(1.47)	(1.69)	(1.30)	(1.45)	(1.65)	(1.24)	(1.57)	(1.62)	(1.51)

Notes:
FY2009-FY2011 data from Murphy, et al. (Table 11, 2012). FY2012 data from NERO (Table 12, 2013).

6.5.3.4 Fleet Characteristics

The groundfish fishery has traditionally been made up of a diverse fleet, comprised of a range of vessels sizes and gear types. Over the years, as vessels entered and exited the fishery, the typical characteristics defining the fleet changed as well. As mentioned in Section 6.5.2, the number of active vessels has declined each year since FY2007. This decline has occurred across all vessel size categories (Table 26). The 30' to < 50' vessel size category, which has the largest number of active groundfish vessels, experienced a 37% decline (351 to 220 active vessels) between FY2007 and FY2011. Most (146) sector vessels fell into this 30' to 50' size category. The 50' to < 75' vessel size category, containing the second

[5] "Groundfish trip" is defined as a trip where the vessel owner or operator declared, either through the vessel monitoring system or through the interactive voice response system, that the vessel was making a groundfish trip.
[6] The data is taken from different source materials (VMS, etc.) than other data in this document, and thus, may be slightly different than.

largest number of vessels, experienced the largest reduction (41%) between FY2007 and FY2011 (194 to 115 vessels). The vessels in the largest (≥75') vessel size category experienced the least declined (19%) between FY2007 and FY2011.

Between FY2010 and FY2011, the numbers of vessels that joined a sector or stayed in the common pool were about evenly split within size categories with the exception of the largest and smallest categories (Table 26). For active vessels larger than 75' total length, 67% belong to a sector in FY2010 and 69% belong to a sector in FY2011. Of active vessels in the smallest size category, those smaller than 30' in length, 84% remained in the common pool in while 89% of vessels smaller than 30' remained in the common pool in FY2011. There have been a growing proportion of active vessels in the 30' to 50' and 50' to 75' ranges belonging to sectors. In FY2010, active sector vessels comprised 47% and 54% of the 30' to 50' and 50' to 75' ranges respectively. By 2011, those proportions had increased to 55% and 58% of active sector vessels in the 30' to 50' and 50' to 75' ranges.

Table 26 - Vessel activity by size class

	2007	2008	2009	2010			2011		
				Total	Sector	Common Pool	Total	Sector	Common Pool
Vessels with landings from any species									
Less than 30	83	77	78	70	11	59	53	6	47
30 to < 50	572	528	500	475	225	250	419	229	190
50 to < 75	289	267	247	231	125	106	220	128	92
75 and above	139	140	132	120	79	41	120	83	37
Total	1,082	1,012	957	896	440	456	812	446	366
Vessels with at least one groundfish trip									
Less than 30	29	26	33	23	2	21	19	1	18
30 to < 50	351	331	308	241	152	89	220	146	74
50 to < 75	194	175	156	117	88	29	115	92	23
75 and above	84	79	73	64	61	3	68	62	6
Total	658	611	570	445	303	142	422	301	121

Notes:
FY07 and FY08 totals from Kitts, et al. (Table 9, 2011). FY10-FY11 totals from and Murphy et al. (Table 10, 2012).

Fishing effort, as described by either the number of trips taken or the total number of days absent, varies considerably by vessel size. In FY2012, 67% of groundfish trips were made by vessels ranging from 30 to 50 feet in length (

Table 27). Compared to FY2011, FY2012 had decreases in the numbers of groundfish trips and the total number of days absent on groundfish trips across almost all vessel size classes. The largest decreases in groundfish trips and days absent on groundfish trips occurred in the less than 30’ vessel size category (30% and 25%, respectively). There were fewer than 200 hundred trips per year in this vessel size category. The 50’ to < 75’ vessels were in the only size category that experienced an increase in the number of groundfish trips (2%) from FY2011 to FY2012. From 2019 to 2012, non-groundfish trips and the number of days absent on non-groundfish trips, has generally declined for all vessel size classes.

Table 27 - Effort by vessel size category

	2009	2010			2011			2012		
		Total	Sector	CP	Total	Sector	CP	Total	Sector	CP
Number of groundfish trips										
≤30	435	137	2	135	274	15	259	192	6	186
30 - < 50	19,349	9,240	7,509	1,731	11,114	9,401	1,713	9,751	8,603	1,148
50 - < 75	4,971	2,829	2,442	387	3,368	3,067	301	3,439	3,226	213
≥75	1,301	1,235	1,206	29	1,173	1,159	14	1,114	1,108	6
Total	26,056	13,441	11,159	2,282	15,929	13,642	2,287	14,496	12,943	1,553
Number of non-groundfish trips										
≤30	1,784	1,703	370	1,333	1,372	258	1,114	1,093	192	901
30 - < 50	23,216	25,204	9,678	15,526	21,585	10,443	11,142	20,227	10,899	9,328
50 - < 75	12,090	12,321	5,456	6,865	10,920	5,036	5,884	9,072	4,761	4,311
≥75	2,853	2,523	1,287	1,236	2,507	1,264	1,243	2,129	1,237	892
Total	39,943	41,751	16,791	24,960	36,384	17,001	19,383	32,523	17,090	15,493
Number of days absent on groundfish trips										
≤30	160	61	1	60	103	7	96	77	3	75
30 - < 50	8,794	5,067	3,958	1,109	6,332	5,216	1,116	5,740	5,014	727
50 - < 75	8,278	5,656	5,305	351	6,713	6,447	266	6,626	6,467	159
≥75	7,006	6,831	6,792	38	7,576	7,558	19	7,113	7,097	16
Total	24,237	17,614	16,057	1,558	20,724	19,227	1,498	19,557	18,581	976
Number of days absent on non-groundfish trips										
≤30	573	537	123	414	419	81	337	314	53	261
30 - < 50	8,657	9,540	3,633	5,906	8,215	3,683	4,532	7,998	4,084	3,914
50 - < 75	12,681	12,545	6,491	6,053	11,498	6,414	5,084	11,338	6,584	4,754
≥75	9,330	8,930	5,199	3,731	7,780	4,795	2,986	7,824	4,596	3,228
Total	31,241	31,551	15,446	16,105	27,912	14,972	12,940	27,474	15,317	12,157

Notes:
"Effort" is measured by number of trips and days absent. FY2009-FY2011 data from Murphy, et al. (Table 11, 2012). FY2013 data from NERO (Table 12, 2013).

6.5.3.5 Fishing Communities

There are over 100 communities that are homeport to one or more Northeast groundfish fishing vessels. These ports occur throughout the New England and Mid-Atlantic. Consideration of the economic and social impacts on these communities from proposed fishery regulations is required by the National Environmental Policy Act (NEPA 1970) and the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA 2007). Before any agency of the federal government may take "actions significantly affecting the quality of the human environment," that agency must prepare an Environmental Assessment (EA) that includes the integrated use of the social sciences (NEPA Section 102(2)(C)). National Standard 8 of the MSA stipulates that "conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities" (16 U.S.C. § 1851(a)(8)).

A "fishing community" is defined in the Magnuson-Stevens Act, as amended in 1996, as "a community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community" (16 U.S.C. § 1802(17)). Determining which fishing communities are "substantially dependent" on, and "substantially engaged" in, the groundfish fishery can be difficult.

Although it is useful to narrow the focus to individual communities in the analysis of fishing dependence, there are a number of potential issues with the confidential nature of the information. There are privacy concerns with presenting the data in such a way that proprietary information (landings, revenue, etc.) can be attributed to an individual vessel or a small group of vessels. This is particularly difficult when presenting information on small ports and communities that may only have a small number of vessels, such that information can easily be attributed to a particular vessel or individual.

6.5.3.5.1 Primary and Secondary Fishing Ports

In recent amendments to the FMP, the Council has categorized communities dependent on the groundfish resource into primary and secondary port groups, so that community data can be cross-referenced with other demographic information. Descriptions of 24 of the most important communities involved in the multispecies fishery, and further descriptions of Northeast fishing communities in general, can be found on Northeast Fisheries Science Center's website (Clay et al. 2007).
Table 28 lists the ports most important to fishermen participating in sectors.

Table 28 - Home ports and landing ports for sector fishermen in FY2013

State	Primary Ports[a]		Other Ports[b]	
Connecticut:	n/a		New London, Stonington	
Massachusetts	Boston	New Bedford	Barnstable	Provincetown
	Chatham	Newburyport	Dennis	
	Gloucester	Plymouth	Hyannis	
	Harwich	Rockport	Nantucket	
	Marshfield	Sandwich		
	Menemsha	Situate		
Maine	Boothbay Harbor		Bar Harbor	Saco
	Harpswell		Five Islands	South Bristol
	(Cundy's Harbor)		Jonesport	Southwest Harbor
	Kennebunkport		Phippsburg (Sebasco	Stonington
	Port Clyde		Harbor)	Tenant's Harbor
	Portland		Rockland	Tremont (Bass Harbor)
				Winter Harbor
New Hampshire	Portsmouth		n/a	
	Rye			
	Seabrook			
New Jersey	n/a		Barnegut Light	
			Cape May	
			Point Pleasant	
New York	Montauk		Hampton Bays- Shinnecock	
			Greenport	
Rhode Island	Point Judith		n/a	
	Newport			
Virginia	n/a		Chincoteague, Greenbackville	

Notes:
[a] Listed by one or more sector as a primary port in their FY2014 operations plans. A primary port refers to those ports used to land the majority of catch from active sector vessels or where the majority of sector vessels are home ported.
[b] Includes those ports listed by one or more sector as a secondary port but not a primary port. The other ports

category includes all remaining ports that may be used by sector vessels.
Source: FY2013 sector operations plans.

Framework 51 contains several alternatives that are specific to Gulf of Maine cod, plaice, white hake and the Georges Bank stocks (cod, haddock, yellowtail flounder). To help describe which port communities could be most affected by the stock-specific alternatives, Table 29 identifies the landings by homeport for FY2012, using the primary ports identified since Amendment 13. GOM cod, plaice, and white hake are important to homeports throughout the Northeast, where as the Georges Bank stocks are important to the larger port communities, such as Portland, Boston, Gloucester, and New Bedford.

Table 29 - FY2012 landings (lbs.) of selected groundfish stocks by homeports

State	Port	GOM Cod	GB Cod East	GB Haddock East	GB Yellowtail Flounder	Plaice	White Hake
ME	Portland	172,610	6,126	126,510	254	574,938	1,290,823
	Other	441,965	0	0	0	256,778	766,516
NH	Portsmouth	170,360	c	c	0	6,098	129,001
	Other	451,550	0	0	0	27,928	84,527
MA	Boston	692,359	15,471	161,870	30,126	921,301	1,269,153
	Chatham/Harwichport	c	0	0	c	8,808	74,672
	Gloucester	1,646,086	5,357	54,581	3,073	305,527	973,713
	New Bedford/Fairhaven	105,227	45,504	178,859	284,578	571,794	448,681
	Other	744,294	c	85,902	c	179,792	158,355
RI	Point Judith	c	306	728	25,915	35,649	15,856
	Other	c	c	c	35,139	18,377	6,716
NY	Eastern Long Island	0	c	c	c	2,761	2,193
	Other	c	0	c	0	1,758	18,902
**Other		105,023	391	25,101	11,194	102,161	119,263
Total		***4,529,474**	***73,155**	***633,551**	***390,279**	**3,013,670**	**5,358,371**

Notes:
** = Includes states not listed and landings from CPH permits not attributed to a state.
c = Confidential, because less than three ownership groups are included.
* = Total does not include confidential data.
Data from NEFSC, November 2013.

6.5.3.5.2 Vessel Activity

At the state level, Massachusetts has the highest number of active vessels with a limited access groundfish permit. From FY2007 to FY2012, the total number of active vessels with revenue from any species on all trips declined 29% (1,082 to 764) (Table 30). All states have shown a decline in the number of active vessels since 2007, but the largest percentage decline has occurred in Connecticut where the number of active vessels dropped 44% by FY2012. Of the active vessels that belong to a sector, 57% have a homeport in Massachusetts (252 vessels). New Jersey and Connecticut are the two states in the Northeast with the fewest vessels belonging to a sector. At the level of homeport, there is even greater variation between the ports with regard to the numbers of active vessels.

Table 30 - Number of vessels with revenue from any species (all trips) by homeport and state

Home Port State/City	2007	2008	2009	2010			2011			2012		
				Total	Sect.	CP	Total	Sect.	CP	Total	Sect.	CP
CT	18	13	13	12	4	8	11	4	7	10	5	5
MA	544	502	482	444	264	183	396	262	134	375	252	123
Boston	80	69	67	57	41	16	53	41	12	47	37	10
Chatham	46	41	42	43	31	12	39	28	11	38	29	9
Gloucester	124	116	115	109	70	39	95	68	27	92	66	26
New Bedford	93	91	87	69	48	22	70	53	17	69	51	18
ME	128	116	114	103	63	40	88	70	20	95	76	19
Portland	22	18	17	17	15	2	16	15	1	18	16	2
NH	70	65	62	57	37	22	52	34	52	41	29	12
NJ	67	71	63	58	2	56	52	6	52	47	10	37
NY	98	100	97	95	15	80	92	16	92	88	19	69
RI	110	104	95	87	43	45	84	44	84	77	42	35
Point Judith	58	54	50	46	33	14	45	34	12	44	35	9
Other States	47	41	35	39	13	26	37	14	23	37	15	22
Total	**1,082**	**1,012**	**957**	**890**	**440**	**456**	**805**	**446**	**366**	**764**	**446**	**320**

Notes:
FY2007 and FY2008 data from Kitts, et al. (Table 31, 2011). FY2009-FY2011 data from Murphy, et al. (Table 38, 2012). FY2013 data from NERO (Table 10, 2013).

Massachusetts is also the state with the highest number of active vessels with revenue from at least one groundfish trip (207 vessels) (Table 31). From FY2007 to FY2012, the total number of active vessels with revenue from at least one groundfish trip declined 39% (658 to 401). While all states showed a decline in the number of vessels making groundfish trips, the largest percentage decline occurred in New Jersey (-73%; 41 to 11 vessels). Of the sector vessels making groundfish trips in FY2012, 59% have a homeport in Massachusetts (179 vessels). Again, New Jersey and Connecticut are the two states with the fewest sector vessels making groundfish trips.

Table 31 - Number of vessels with revenue from at least one groundfish trip by homeport and state

Home Port State/City	2007	2008	2009	2010			2011			2012		
				Total	Sect.	CP	Total	Sect.	CP	Total	Sect.	CP
CT	9	8	8	7	3	4	5	2	3	5	3	2
MA	341	321	312	238	189	49	224	186	38	207	179	28
Boston	54	49	46	35	33	2	34	34	0	28	28	0
Chatham	26	27	28	26	23	3	26	23	3	23	21	2
Gloucester	95	88	98	74	59	15	70	55	15	61	54	7
New Bedford	60	62	52	33	29	4	37	32	5	36	32	4
ME	78	69	65	43	38	5	47	43	4	51	48	3
Portland	20	16	15	15	14	1	15	15	0	16	16	0
NH	44	42	42	32	26	6	29	23	6	25	20	5
NJ	41	34	26	21	1	20	17	1	16	11	2	9
NY	52	56	47	40	8	32	43	9	34	43	12	31
RI	78	70	60	55	34	21	49	32	17	54	37	17
Point Judith	43	36	32	31	28	3	28	27	1	33	31	2
Other States	15	11	12	10	5	5	8	5	3	6	2	4
Total	**658**	**611**	**570**	**445**	**303**	**142**	**420**	**301**	**121**	**401**	**303**	**99**

Notes:
FY2007 and FY2008 data from Kitts, et al. (Table 32, 2011). FY2009-FY2011 data from Murphy, et al. (Table 39, 2012). FY2013 data from NERO (Table 11, 2013).

6.5.3.5.3 Employment

Along with the restrictions associated with presenting confidential information, there is also limited quantitative socio-economic data upon which to evaluate the community-specific importance of the multispecies fishery. In addition to the direct employment of captains and crew, the industry is known to support ancillary businesses such as gear, tackle, and bait suppliers; fish processing and transportation; marine construction and repair; and restaurants. Regional economic models do exist that describe some of these inter-connections at that level (Clay, et al. 2007; NMFS 2010; Olson & Clay 2001a; b; Thunberg 2007).

Throughout the Northeast, many communities benefit indirectly from the multispecies fishery, but these benefits are often difficult to attribute. The direct benefit from employment in the fishery can be estimated by the number of crew positions.[7] However, crew positions do not equate to the number of jobs in the fishery and do not make the distinction between full and part-time positions. In FY2012, vessels

[7] Crew positions are measured by summing the average crew size of all active vessels on all trips.

with limited access groundfish permits provided 2,025 crew positions, with 49% coming from vessels with homeports in Massachusetts (Table 32). Since 2007, the total number of crew positions provided by limited access groundfish vessels has declined by 33% (2,687 to 2,025). Changes in crew positions vary across homeport states; Maine added a few positions in FY2012. Vessels with a homeport in Connecticut (-38%; 52 to 32) and New Hampshire (-36%; 139 to 89) have experienced the largest percentage decline. New York has had a fairly steady number of crew positions.

Table 32 - Number of crew positions and crew days on active vessels by homeport and state

Homeport State		2007	2008	2009	2010	2011	2012
CT	Total crew positions	52	39	38	39	41	32
	Total crew days	4,261	3,779	3,317	3,614	3,067	3,329
MA	Total crew positions	1,402	1,311	1,152	1,104	1,063	997
	Total crew days	98,094	93,182	86,234	77,422	82,238	97,945
ME	Total crew positions	276	250	216	220	204	214
	Total crew days	17,872	15,882	14,414	14,427	14,148	19,846
NH	Total crew positions	139	123	114	109	100	89
	Total crew days	6,443	6,135	5,925	3,813	4,663	4,883
NJ	Total crew positions	167	185	159	140	143	141
	Total crew days	12,035	12,987	10,708	9,801	9,364	9,672
NY	Total crew positions	204	214	205	201	211	201
	Total crew days	16,656	15,975	15,479	15,020	15,439	14,449
RI	Total crew positions	304	281	253	243	238	225
	Total crew days	32,072	29,690	24,167	25,454	24,938	24,263
OTHER NORTHEAST	Total crew positions	145	144	123	133	128	125
	Total crew days	12,158	14,794	12,166	11,626	11,767	10,620
Total	Total crew positions	2,687	2,545	2,260	2,190	2,129	2,025
	Total crew days	199,593	192,423	172,410	161,178	165,624	185,006

Notes:
FY2007 and FY2008 data from Kitts, et al. (Table 32, 2011). FY2009-FY2011 data from Murphy, et al. (Table 39, 2012). FY2013 data from NERO (Table 11, 2013).

A crew day[8] is another measure of employment opportunity that incorporates information about the time spent at sea earning a share of the revenue. Conversely, crew days can be viewed as an indicator of time invested in the pursuit of “crew share” (the share of trip revenues received at the end of a trip). The time spent at sea has an opportunity cost. For example, if crew earnings remain constant, a decline in crew days would reveal a benefit to crew in that less time was forgone for the same amount of earnings.

In FY2012, vessels with limited access groundfish permits used 185,006 crew days, with 53% coming from vessels with homeports in Massachusetts (Table 32). From FY2007 to FY2012, the total number of crew days used by limited access groundfish vessels has declined by 17% (199,593 to 165,624 crew days), buy FY2012 has an increase in crew days. In FY2012, all states increased crew days except New York and Rhode Island. Since FY2007, vessels with a homeport in New Hampshire experienced the largest percentage decline in crew days (-24%; 6,443 to 4,883). Massachusetts had the least percentage

[8] Similar to a “man-hour,” a “crew day” is calculated by multiplying a vessel’s crew size by the days absent from port. Since the number of trips affects the crew-days indicator, the indicator is also a measure of work opportunity.

decline in crew days (-0.15%; 98,094 to 97,945). Maine was the only state to increase the percentage of crew days (12%; 17,872 to 19,846).

The number of crew positions and crew days give some indication of the direct benefit to communities from the multispecies fishery through employment. But these measures, by themselves, do not show the benefit or lack thereof at the individual level. Many groundfish captains and crew are second- or third-generation fishermen who hope to pass the tradition on to their children. This occupational transfer is an important component of community continuity as fishing represents an important occupation in many of the smaller port areas.

6.5.3.5.4 Consolidation and Redirection

The multiple regulatory constraints placed on common pool groundfish fishermen are intended to control their effort and catch per unit effort (CPUE) as a means to limit mortality. Exemptions to many of these controls, which have been granted to sectors, may increase the CPUE of sector participants. As a result, sector fishermen may have additional time that they could direct towards non-groundfish stocks that they otherwise would not have pursued, resulting in redirection of effort into other fisheries. Additionally, to maximize efficiency, fishermen within a single sector may be more likely to allocate fishing efforts such that some vessels do not fish at all. This is referred to as fleet consolidation.

Both redirection and consolidation have been observed when management regimes for fisheries outside the Northeast US shifted toward a catch share management regime such as sectors. For example, research following the rationalization of the halibut and sablefish fisheries by the North Pacific Fishery Management Council found individuals who received enough quota shares were able to continue fishing with less competition, greater economic certainty, and over a longer fishing season (Matulich & Clark 2001). However, individuals who did not receive enough of a catch share either bought or leased catch shares from other fishermen or sold their quota. Similarly, one year after implementation of the Bering Sea-Aleutian Island crab fishery Individual Transferable Quota (ITQ), a study found that about half of the vessels that fished the 2004/2005 Bering Sea Snow Crab fishery did not fish the following year. However, research on the ITQ plan for the British Columbia halibut fishery found efficiency gains were greatest during the first round of consolidation, and little incentive to increase efficiency (or continue consolidation) existed afterward (Pinkerton & Edwards 2009). The scope of consolidation and redirection of effort that may be expected to result from sector operations in FY2014 is difficult to predict.

6.5.3.6 FY2012 Regulated Groundfish Stock Catches

The Northeast Multispecies FMP specifies Annual Catch Limits (ACLs) for twenty stocks. Exceeding the ACL results in the implementation of Accountability Measures (AMs) to prevent overfishing. The ACL is sub-divided into different components. Those components that are subject to AMs are referred to as sub-ACLs. There are also components of the fishery that are not subject to AMs. These include state waters catches that are outside of federal jurisdiction, and a category referred to as "other sub-components" that combines small catches from various fisheries.

Table 33 - **Error! Reference source not found.** compare FY2012 catches to ACLs. As shown in Table 34, catches exceed ACLs for only two stocks: GOM/GB windowpane flounder and SNE/MA windowpane flounder. ACLs for these two stocks were also exceeded in FY2010 and FY2011. AMs for those stocks were modified in FW47. Table 35 summarizes catches by non-groundfish components of the ACLs. Assignment of catches to a specific FMP is difficult unless the FMP uses a specific gear (e.g. the scallop fishery) or has a trip activity declaration (e.g. groundfish and monkfish trips). For this reason, the assignment of catch to FMP should be viewed with caution.

Table 33 - FY2012 Catches of Regulated Groundfish Stocks (Metric Tons, Live Weight)

Stock	Components with ACLs and sub-ACLs; (with accountability measures (AMs))							sub-components: No AMs	
	Total Groundfish	Groundfish Fishery	Sector	Common Pool	Recreational*	Midwater Trawl Herring Fishery**	Scallop Fishery	State Water	Other
	A to G	A+B+C	A	B	C	D	E	F	G
GB cod	1,724.1	1,621.7	1,593.0	28.656				21.5	80.9
GOM cod	3,903.8	3,854.9	2,181.1	29.9	1,644.0			44.6	4.3
GB Haddock	1,525.5	1,197.6	1,197.1	0.5		288.6		14.2	25.1
GOM Haddock	530.0	526.7	245.1	0.9	280.7	0.1		1.7	1.6
GB Yellowtail Flounder	384.9	215.5	215.2	0.3			164.0	0.0	5.4
SNE/MA Yellowtail Flounder	593.5	463.0	425.6	37.4			54.0	12.0	64.6
CC/GOM Yellowtail Flounder	1,012.3	957.6	954.3	3.2				33.7	20.9
Plaice	1,642.8	1,604.7	1,601.4	3.3				15.3	22.8
Witch Flounder	1,174.0	983.3	981.0	2.3				28.2	162.5
GB Winter Flounder	2,057.6	1,931.7	1,930.9	0.8				0.0	125.9
GOM Winter Flounder	322.8	260.0	258.0	2.0				60.2	2.6
SNE/MA Winter Flounder	315.9	106.0	104.8	1.1				58.9	151.0
Redfish	4,445.4	4,429.0	4,423.4	5.6				13.4	3.1
White Hake	2,485.4	2,470.6	2,446.8	23.8				2.8	12.0
Pollock	8,092.4	6,462.5	6,394.7	67.8				532.3	1,097.6
Northern Windowpane	208.9	129.6	129.5	0.1				2.3	77.0
Southern Windowpane	520.9	106.5	95.9	10.6				34.4	380.0
Ocean Pout	53.2	39.1	35.4	3.6				1.2	13.0
Halibut	75.7	60.7	57.4	3.3				13.3	1.7
Wolffish	32.4	30.2	30.0	0.1				1.0	1.2

Notes:
Catch includes any FY2011 carryover caught by sectors in FY2012. Data as of Nov. 5, 2013, Northeast Regional Office. Values for a non-allocated species may include landings of that stock; misreporting of species and/or stock area; and/or estimated landings (in lieu of missing reports) based on vessel histories.
*Recreational estimates based on Marine Recreational Information Program (MRIP) data. **Landings extrapolated from observer data.

Table 34 – FY2012 Catches as Percent of ACL

Stock	Components with ACLs and sub-ACLs (with accountability measures (AMs))							sub-components: No AMs	
	Total Groundfish*	Groundfish Fishery*	Sector*	Common Pool	Recreational**	Midwater Trawl Herring Fishery	Scallop Fishery	State Water	Other
GB cod	26.9	26.1	26.0	35.4				42.2	39.7
GOM cod	58.3	60.4	47.4	37.3	74.2			17.6	6.9
GB Haddock	1.1	0.0	-	0.6		100.9		4.6	2.0
GOM Haddock	47.3	49.3	25.9	18.6	108.4	0.6		11.1	7.1
GB Yellowtail Flounder	70.3	58.5	59.1	6.1			104.5	n/a	23.9
SNE Yellowtail Flounder	59.3	55.8	63.7	24.4			42.5	120.2	161.5
CC/GOM YTF	83.5	82.9	84.7	13.0				96.4	91.0
Plaice	38.8	39.7	40.3	6.1				42.5	15.7
Witch Flounder	67.4	59.6	60.3	10.5				57.5	246.2
GB Winter Flounder	53.4	52.6	52.9	3.9				n/a	67.0
GOM Winter Flounder	28.1	32.0	32.9	7.8				22.1	4.9
SNE/MA Winter Flounder	52.4	35.0	n/a	n/a				33.7	120.8
Redfish	42.1	44.2	44.3	16.6				14.5	0.8
White Hake	67.2	70.5	70.3	91.6				3.8	11.0
Pollock	45.5	40.3	40.0	82.7				70.6	80.1
Northern Windowpane	128.2	100.5	n/a	n/a				115.9	233.2
Southern Windowpane	136.7	147.9	n/a	n/a				88.3	140.7
Ocean Pout	22.2	18.3	n/a	n/a				38.5	56.3
Halibut	91.2	168.7	n/a	n/a				30.8	42.2
Wolffish	42.0	41.3	n/a	n/a				99.2	40.6

Notes:
Data as of Nov. 5, 2013, Northeast Regional Office.
* With the exception of GOM cod the percent of the FY 2012 catch limits caught does not include any FY 2011 carryover caught by sectors in FY 2012. FY 2011 carryover caught is not applied to the FY 2012 ACL. For 2012 year-end accounting, all sector carryover for GOM cod should be counted against the groundfish sub-ACL. As with all other stocks, do not apply sector carryover for GOM cod against a sector's ACE or the sector sub-ACL for in-season monitoring.
** To determine if recreational AM is triggered, the Regional Administrator must use the 3-year average catch compared to the 3-year average of the recreational sub-ACL for a stock.

Table 35 - FY2012 Catches by Non-Groundfish FMPs (Metric Tons, Live Weight)

Stock	Total	Scallop[1]	Fluke	Hagfish	Herring	Lobster/ Crab	Menhaden	Monkfish	Red Crab	Research
GB cod	90.2	5.7	0.6	0.0	0.3	0.7	0.1	0.1	0.0	12.3
GOM cod	28.8	-	0.6	0.0	2.9	0.1	0.0	0.0	-	8.7
GB Haddock	305.8	2.4	8.2	-	14.4**	2.3	-	0.1	-	18.1
GOM Haddock	8.4	-	0.0	0.0	2.6**	0.1	-	-	-	0.2
GB Yellowtail Flounder	43.2	-**	0.1	0.0	1.0	0.0	-	0.0	0.0	-
SNE Yellowtail Flounder	26.7	-**	8.5	-	0.1	0.0	0.0	0.1	0.0	3.4
CC/GOM Yellowtail Flounder	8.1	2.9	0.1	0.0	0.5	0.0	0.0	0.0	-	2.5
Plaice	12.6	0.0	1.3	0.0	1.4	0.5	0.3	0.0	0.0	1.5
Witch Flounder	166.4	18.0	19.5	0.0	7.2	1.5	0.4	0.2	0.0	1.1
GB Winter Flounder	59.4	38.4	0.3	-	0.4	0.0	-	-	-	-
GOM Winter Flounder	13.2	2.0	0.0	0.0	0.2	0.0	-	-	-	0.2
SNE Winter Flounder	164.9	60.3	16.4	0.0	2.6	0.6	0.0	0.2	0.0	3.5
Redfish	10.2	0.0	3.1	0.0	0.2	0.1	0.0	0.0	0.0	0.1
White Hake	4.4	2.0	0.4	0.0	0.0	0.1	0.0	0.6	0.0	0.0
Pollock	757.6	-	0.8	0.0	0.5	0.2	0.1	0.0	0.0	0.6
Northern Windowpane	34.8	33.0	0.0	0.0	0.2	0.0	-	0.0	0.0	0.0
Southern Windowpane	376.0	135.3	75.9	-	1.6	0.6	0.1	0.6	0.0	0.0
Ocean Pout	29.5	6.4	6.5	0.0	0.4	0.1	0.0	0.0	0.0	0.0
Halibut	2.5	0.8	0.1	-	0.1	0.4	-	0.0	-	0.0
Wolffish	0.1	-	0.0	-	-	-	-	-	-	-

Notes:
[1]Based on scallop fishing year March, 2011 through February, 2012
*Estimates not applicable. Recreational amounts are not attributed to the ACL consistent with the assessments for these stocks used to set FY2011 quotas.

Table 35 – Cont.

Stock	Scup	Shrimp	Squid	Squid/ Whiting	Surf Clam	Tilefish	Whelk/Conch	Whiting	Unknown	Rec.
GB cod	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.0	15.2	54.6
GOM cod	2.5	0.7	0.4	3.1	0.0	-	0.0	2.6	7.3	-**
GB Haddock	5.5	0.1	98.8	52.0	-	-	-	0.9	102.9	N/A*
GOM Haddock	-	0.5	0.0	0.8	-	-	0.0	1.9	2.4	-**
GB Yellowtail Flounder	0.2	0.0	0.2	40.7	-	-	0.0	-	1.0	
SNE Yellowtail Flounder	4.5	0.0	1.2	1.2	0.0	0.0	0.0	0.0	7.7	
CC/GOM Yellowtail Flounder	0.3	0.1	0.0	0.4	0.0	-	0.0	0.3	0.9	
Plaice	0.8	0.0	2.1	1.3	0.0	0.0	0.0	0.0	3.2	
Witch Flounder	13.0	0.2	35.3	20.7	0.0	0.0	0.1	0.8	48.3	
GB Winter Flounder	1.2	0.0	0.2	16.7	-	-	-	0.1	2.2	
GOM Winter Flounder	-	0.0	0.0	0.1	-	-	0.0	0.2	0.2	10.3
SNE Winter Flounder	8.3	0.0	19.5	6.8	0.0	0.0	0.0	0.1	34.9	11.7
Redfish	2.1	0.0	0.9	0.8	0.0	0.0	0.0	0.0	2.9	
White Hake	0.4	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.6	
Pollock	0.5	0.0	0.1	0.1	0.0	0.0	0.0	0.0	6.1	748.5
Northern Windowpane	0.0	0.0	0.0	1.4	0.0	-	0.0	0.1	0.1	
Southern Windowpane	48.7	0.0	17.8	14.9	0.0	0.0	0.0	0.1	80.5	
Ocean Pout	4.4	0.0	2.7	2.1	0.0	0.0	0.0	0.1	6.9	
Halibut	0.1	0.0	0.3	0.2	-	-	-	0.0	0.5	
Wolffish	-	-	-	-	-	-	-	-	0.1	

6.5.3.7 Sector Fishing Activity

In FY2010, the sector vessels landed the overwhelming majority of the groundfish ACL. This document includes sector data from FY2010 to FY2012. Data from FY2009 is also included for vessels that were sector members in FY2010. This approach informs the analysis and provides a baseline for the public to better understand the operation of the sector fishery. Some differences in totals between this analysis and prior analyses exist. These are due to updates to the source data (VTR database and Data Matching and Imputation database (DMIS)) as well a minor modification to the sector membership algorithm. Sector membership is now based on MRI rather than vessel permit number, because the MRIs within a sector do not change during the fishing year, whereas a vessel permit may move into or out of a sector (although this is rare). Hence, MRI is a more reliable means of tracking sector membership.

For the purpose of this EA, and for the management of the sector fishery, a "groundfish trip" is defined as a sector trip where groundfish is landed, and applied to a sector ACE. This definition differs from other methods of defining a groundfish trip. Other methods use a sector VMS declaration to define a groundfish trip regardless of whether groundfish was landed and applied to a sector ACE. Unless stated otherwise, NMFS compiled most of the gear and/or location-specific data presented in this section, and elsewhere in the document from vessel trip reports (VTR). The Northeast Regional Office used VTR data because it contains effort data, and gear and positional information. NMFS took some of the data in the document, such as that concerning protected resources, from the Northeast fisheries observer data set. It is important to note that there are different sources of fishery data (i.e., observer, self-reported, dealer, etc.), and the data used in this EA may be different than data published from other sources, such as reports from the NEFSC, and from data published for other uses.

The EA analysis uses complete data sources. As such, we excluded trips with undefined gear, missing land dates, missing sector membership, and trips that did not submit a VTR. Such records may be included in other groundfish trip analysis and reports, but detailed trip data is required for the purpose of this EA. Total trip counts and catch counts in the EA may differ when comparing to the sector data available to the public on the NMFS website. Reasons for this difference include the following:

- The EA analyses use VTR and observer data (rationale explained above). The data on the sector website is from VMS, VTR, and dealer data. Therefore, a trip that was reported by a dealer, but which has no corresponding VTR, is displayed on the website, but not in the EA. Likewise, a trip that is reported only on the VMS declaration will be counted on the website, but is not included in the EA. This is the major source of trip count differences.
- The EA uses data from three years. The primary purpose of quota monitoring is to determine the ACE as accurately as possible. Because of this difference in purpose, NMFS matches trips between multiple data sources to account for misreporting. The EA has two data sources but uses them in separate analyses, thus it does not need to perform trip matching. Trip matching can have small effects on trip counts.
- Catch weights will differ between the EA and other publically available sector data because the EA uses landed weight, as estimated by fishermen and reported on the VTR, whereas NMFS reports dealer live weight on their website.

6.5.3.7.1 Annual Catch Entitlement Comparison

Each sector receives a total amount (in pounds) of fish it can harvest for each stock. This amount is the sector's Annual Catch Entitlement (ACE). To determine the ACE, the sum of all of the sector members' potential sector contributions (PSCs) (a percentage of the ACL) are multiplied by the ACL to get the sector's ACE. Since the annual ACE is dependent on the amount of the ACL for a given fishing year, the ACE may be higher or lower from year to year even if the sector's membership remained the same. As seen in Table 36, there are substantial shifts in ACE for various stocks between FY2009 and FY2012. As seen in the below data, there has been a general decrease in trips, and catch for sector vessels. In addition, there has been a shift in effort out of the groundfish fishery into other fisheries. However, these changes may correlate to a certain extent with the decrease in ACL.

Table 36 - Commercial groundfish sub-ACL, FY 2009 to FY 2012

Groundfish Stock	FY2009 target/hard TAC (lbs)	FY2010 ACL (lbs)	% Change 2009 to 2010	FY2011 ACL (lbs)	% Change 2010 to 2011	FY2012 ACL (lbs)	% Change 2011 to 2012
Witch Flounder	2,489,019	1,878,338	-24.53%	2,724,914	45.07%	3,192,294	8.34%
White Hake	5,238,183	5,635,015	7.58%	6,556,548	16.35%	7,237,776	10.39%
SNE/MA Yellowtail Flounder	857,598	683,433	-20.31%	1,155,222	69.03%	1,675,513	45.04%
Redfish	18,990,619	15,092,846	-20.52%	16,625,059	10.15%	18,653,483	10.40
Pollock	13,990,535	36,493,118	160.84%	30,758,895	-15.71%	27,804,700	-9.60%
Plaice	7,085,657	6,278,765	-11.39%	6,851,967	9.13%	7,226,753	5.47%
GOM Winter Flounder	835,552	348,330	-58.31%	348,330	0.00%	1,576,305	352.53%
GOM Haddock	3,448,030	1,818,814	-47.25%	1,715,196	-5.70%	1,439,619	-16.07
GOM Cod	23,642,373	10,068,512	-57.41%	10,637,304	5.65%	4,310,037	-59.48%
GB Yellowtail Flounder	3,564,875	1,814,404	-49.10%	2,517,679	38.76%	479,946	80.94%
GB Winter Flounder	4,418,064	4,082,961	-7.58%	4,424,678	8.37%	7,467,057	68.76%
GB Haddock West	171,861,356	62,725,923	-63.50%	46,164,798	-26.40%	45,322,632	-1.82%
GB Haddock East	24,471,311	26,429,016	8.00%	21,252,562	-19.59%	15,167,804	-28.63%
GB Cod West	10,965,793	6,816,693	-37.84%	9,041,157	32.63%	9,795,138	8.34%
GB Cod East	1,161,836	745,162	-35.86%	440,925	-40.83%	357,149	-19.00%
CC/GOM Yellowtail Flounder	1,895,975	1,717,401	-9.42%	2,072,345	20.67%	2,306,035	11.28%
Totals	**294,916,777**	**182,628,733**	**-38.07%**	**163,287,579**	**-10.59%**	**153,712,242**	**-5.86%**

Table 37 - Overfishing Limit, Acceptable Biological Catch and Sub-ACLs (mt) for Multispecies

Stock	OFL	U.S. ABC	Components with ACLs and sub-ACLs; (with accountability measures (AMs))							sub-components: No AMs	
			Total ACL	Groundfish sub-ACL	Sector sub-ACL	Common Pool sub-ACL	Recreational sub-ACL	Midwater Trawl Herring Fishery sub-ACL	Scallop Fishery sub-ACL	State Water	Other
			A to G	A+B+C	A	B	C	D	E	F	G
GB cod	7,311	4,766	4,540	4,301	4,208	93				48	191
GOM cod	11,715	9,012	8,545	7,649	4,721	104	2,824			597	299
GB Haddock	59,948	34,244	32,611	30,580	30,393	187		318		342	1,370
GOM Haddock	1,536	1,206	1,141	1,086	770	8	308	11		9	35
GB YTF	3,495	1,458	1,416	1,142	1,122	20			200.8	0	73
SNE YTF	2,174	687	641	524	404	120			82	7	27
CC/GOM YTF	1,355	1,041	992	940	913	27				10	42
Plaice	4,483	3,444	3,280	3,108	3,038	70				34	138
Witch Flounder	1,792	1,369	1,304	1,236	1,211	25				14	55
GB WFL	2,886	2,224	2,118	2,007	1,993	14				0	111
GOM WFL	1,458	1,078	524	329	313	16				163	32
SNE/MA WFL	2,117	897	842	726	NA	726				72	45
Redfish	10,903	8,356	7,959	7,541	7,505	36				84	334
White Hake	4,805	3,295	3,138	2,974	2,946	28				33	132
Pollock	21,853	16,900	16,166	13,952	13,848	104				769	1,445
N. Windowpane	225	169	161	110	NA	110				2	49
S. Windowpane	317	237	225	154	NA	154				2	69
Ocean Pout	361	271	253	239	NA	239				3	11
Halibut	130	78	76	33	NA	33				39	4
Wolffish	92	83	77	73	NA	73				1	3

6.5.3.8 Common Pool Groundfish Fishing Activity

With the adoption of Amendment 16, most commercial groundfish fishing activity occurs under sector management regulations. There are, however, a few vessels that are not members of sectors and continue to fish under the effort control system. Collectively, this part of the fishery is referred to as the "common pool." These vessels fish under both limited access and open access groundfish fishing permits. Common pool vessels accounted for only a small amount of groundfish catch in FY2012 (Table 33). The largest common pool catch (pollock, 67.8 mt) was only 0.8% of the total groundfish fishery catch of this stock. Common pool vessels caught 0.8% of the GOM cod and 0.2% of the GOM haddock groundfish fishery catch.

Common pool vessels landed 1.4M lbs. (live weight) of regulated groundfish in FY2010, worth about $2M in ex-vessel revenues. Landings declined to 544K lbs., worth $814,000 in FY2011. Most common pool vessel groundfish fishing activity takes place in the state of Massachusetts. From FY2010 to FY2011, the activity from Maine ports declined dramatically. The primary ports for this activity are Gloucester, Portland, and New Bedford (Table 38,

Table 39,
Table 40).

The primary groundfish stocks landed by common pool vessels include GOM cod, GB cod, and pollock (Table 41). GB haddock was an important component in FY2010 but not in FY2011. Vessels using HA and HB permits on groundfish trips primarily target GB and COM cod, GOM haddock, and pollock.

For the common pool permits that landed at least one pound of regulated groundfish in either FY2010 or FY2011, groundfish revenues were a major portion of revenues on groundfish fishing trips. Groundfish revenues were 80% or more of the trip revenues for 49% of these vessels; they were 60% of the revenues for 61.5% of these vessels. Dependence on groundfish was greatest for HA permitted vessels, with 70% of these vessels earning all revenues on these trips from regulated groundfish.

Table 38 - Summary of common pool fishing activity

		HB	A	C	D	HA	Total
2010	Permits landing groundfish	64	58	5	6	34	163
	Groundfish lbs. landed	18,116	1,383,650	1,733	2,329	36,844	1,442,672
	Groundfish revenues	$42,961	$1,930,439	$3,857	$3,626	$59,727	$2,040,610
2011	Permits landing groundfish	62	47	6	5	32	147
	Groundfish lbs. landed	39,295	400,603	36,929	2,910	91,585	571,321
	Groundfish revenues	$47,535	$530,738	$62,304	$6,201	$167,838	$814,616

Notes:
Confidential data excluded.

Table 39 - Common pool groundfish landings by state of trip (lbs., live weight)

	2010	2011
MA	903,121	408,562
MD		5
ME	397,257	55,486
NH	7,536	34,445
NJ	11,803	18,665
NY	96,487	36,864
RI	26,446	15,288
VA	5	95
Total	1,442,656	569,411

Table 40 - Common pool groundfish landings by trip report (lbs., live weight)

	2010	2011
Gloucester, MA	427,043	270,533
Portland, ME	388,279	46,017
New Bedford, MA	305,389	32,161
Provincetown, MA	103,239	76,973
Montauk, NY	79,045	20,820
Little Compton, NY	20,886	8,490
Point Pleasant, NJ	7,695	16,775
Hampton Bays, NY	12,743	6,626

Notes:
Confidential data excluded.

Table 41 - Common pool landings by permit category and stock

FY2010 Landings	HB	A	C	D	HA	Total
CODGBW	3,405	115,809	899	1,456	6,514	128,083
CODGMSS	1,328	405,599	761		18,747	426,434
FLDSNEMA		3,311				3,311
FLWGB		12,975				12,975
FLWGMSS	2,905	43,620				46,525
FLWSNEMA	67	3,349	50		23	3,489
HADGBW	233	201,681		11	172	202,098
HADGM	383	13,403	3		1,074	14,863
HALGMMA	3,484	157			293	3,934
HKWGMMA	882	87,785			145	88,812
OPTGMMA	134					134
PLAGMMA	243	46,874				47,117
POKGMASS	3,745	299,944	15	859	9,788	314,351
REDGMGBSS	2	13,410	5	3	88	13,508
WITGMMA		56,310				56,310
WOLGMMA	0					0
YELCCGM	1,306	33,143				34,449
YELGB		17,135				17,135
YELSNE		29,144				29,144
Total	**18,116**	**1,383,650**	**1,733**	**2,329**	**36,844**	**1,442,672**
FY2011 Landings						
CODGBE		3,907				3,907
CODGBW	5,796	97,183	3,506	175	17,382	124,041
CODGMSS	1,834	62,772	21,988	2,733	63,928	153,255
FLDSNEMA		4,802				4,802
FLWGB		2,411				2,411
FLWGMSS	39	5,257	373			5,669
FLWSNEMA	125	540	1	2		668
HADGBE		10				10
HADGBW		25,655			97	25,752
HADGM	898	2,216	182		858	4,153
HALGMMA	989	75			178	1,243
HKWGMMA	60	24,635	3,862		236	28,793
PLAGMMA	7	7,852	686			8,545
POKGMASS	29,284	100,631	5,257		8,759	143,931
REDGMGBSS	182	7,031	38		147	7,398
WITGMMA		7,543	970			8,513
YELCCGM	74	18,889	66			19,029
YELGB		3,944				3,944
YELSNE	7	25,250				25,257
Total	**39,295**	**400,603**	**36,929**	**2,910**	**91,585**	**571,321**

6.5.3.9 Recreational Fishing Activity

The recreational fishery includes private anglers, party boat operators, and charter vessel operators. Several groundfish stocks are targeted by the recreational fishery, including GOM cod, GOM haddock, pollock, and GOM winter flounder. GB cod and haddock are targeted as well, but to a lesser extent. SNE/MA winter flounder is also a target species. Amendment 16 (Section 6.2.5, NEFMC 2009) included a detailed overview of recreational fishing activity.

Recreational removals of GOM cod declined by 72% from FY2011 to FY2012, while catches of GOM haddock declined by 7.5%. The number of angler trips also declined by about 30% (Table 42). The number of active permits also seems to show a slight decline since 2005, though FY2012 data are preliminary (Table 43).

Table 42 - Recent recreational fishing activity for GOM cod and GOM haddock

	FY2011	FY2012
Angler Trips	235,343	164,684
Cod Total Catch (numbers, a+b1+b2)	1,387,441	728,291
Cod Removals (numbers, a+b1+(0.3*b2)))	773,085	410,231
Cod Removals (weight)	2,116	596
Haddock Total Catch (numbers, a+b1+b2)	180,761	320,893
Haddock Total removals (numbers, a+b1)	142,410	144,145
Haddock Total Removal (weight)	227	211

Notes:
FY2012 catches are an estimate since not all data are available.

Table 43 - Recreational for-hire permits reporting catches of groundfish species from the Gulf of Maine

Calendar Year	Active Permits		
	Party	Charter	Total
1999	60	85	145
2000	53	93	146
2001	60	110	170
2002	46	125	171
2003	55	119	174
2004	63	125	188
2005	62	136	198
2006	65	128	193
2007	53	133	186
2008	56	129	185
2009	53	131	184
2010	61	134	195
2011	48	130	178
2012 (preliminary)	41	95	136

6.5.4 Overview of the Atlantic Sea Scallop Fishery

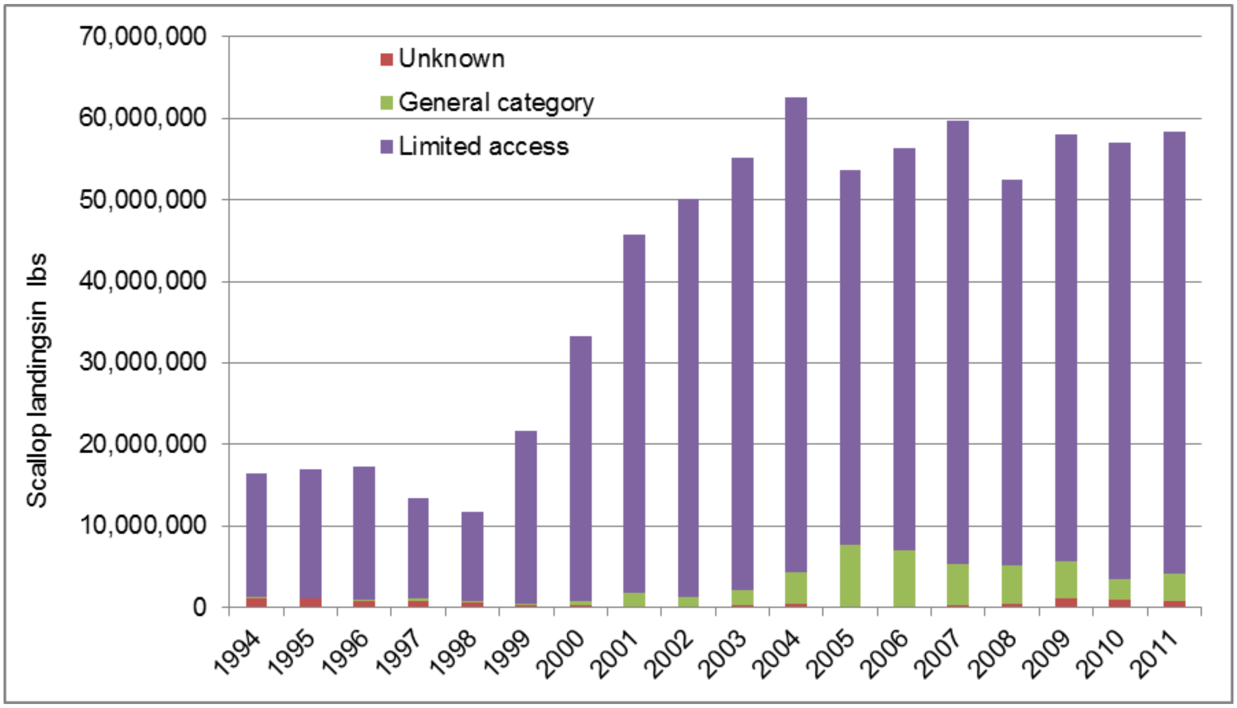
Framework 51 includes an alternative that would prohibit the possession of yellowtail flounder by the limited access scallop fishery

The Scallop FMP was implemented in 1982 and limited entry followed in 1994 (Amendment 4). In the FY2002-2011, the landings from the northeast sea scallop fishery stayed above 50M pounds, surpassing the levels observed historically (Figure 6). The recovery of the scallop resource and consequent increase in landings and revenues was striking given that average scallop landings per year were below 16M pounds during the 1994-1998 fishing years, less than one-third of the present level of landings. This section provides background information in terms of landings, revenues, permits, vessels and various ports and coastal communities in the Northeast sea scallop fishery. See Appendix I of Framework 24 to the Scallop FMP for more information. Unless otherwise indicated, all the tables included are sourced from that document.

The limited access scallop fishery consists of 347 vessels. It is primarily full-time, with 250 full-time (FT) dredge, 52 FT small dredge vessels and 11 FT net boats (Table 7 and Table 8, Appx. I, FRW 24). Since 2001, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices. Amendment 11 implemented a limited entry program for the general category fishery reducing the number of general category permits after 2007. In 2011, there were 288 LAGC IFQ permits, 103 NGOM and 279 incidental catch permits in the fishery totaling 670 permits (Table 13, Appx. I, FRW 24). Although not all vessels with general category permits were active in the years preceding 2008, there is no question that the number of vessels (and owners) that hold a limited access general category permit under the Amendment 11 regulations are less than the number of general category vessels that were active prior to 2008 (Table 11 and Table 12, Appx. I, FRW 24).

Total fleet revenues more than quadrupled, from about $120M in 1994 to almost $600M in 2011 (in inflation-adjusted 2011 dollars) (Figure 6). Scallop ex-vessel prices increased after 2001 as the composition of landings changed to larger scallops that in general command a higher price than smaller scallops. However, the rise in prices was not the main factor that led to the increase in revenue in the recent years compared to 1994-1998. The increase in total fleet revenue was mainly due to the increase in scallop landings and the increase in the number of active limited access vessels during the same period.

Figure 6 – Scallop landings by permit category and fishing years 1994 – 2011

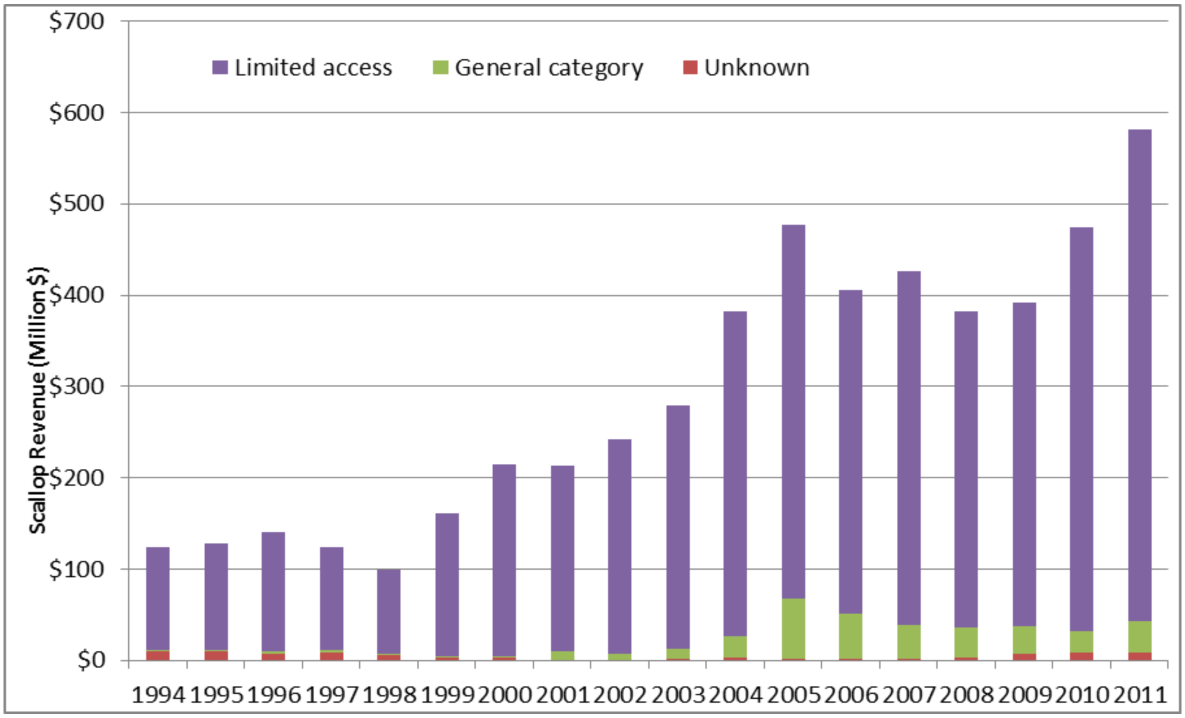


Source: Dealer data.

There has been a steady decline in the total DAS used by the limited access scallop vessels from FY1994 to FY2011 as a result of the effort-reduction measures since Amendment 4 (1994) (Figure 7). The impact of the decline in effort below 30,000 DAS since 2005 (with the exception of 2007) on scallop revenue per vessel was small, however, due to the increase in LPUE from about 1,600 lbs. per DAS in 2007 to over 2,300 pounds per day-at-sea in 2011.

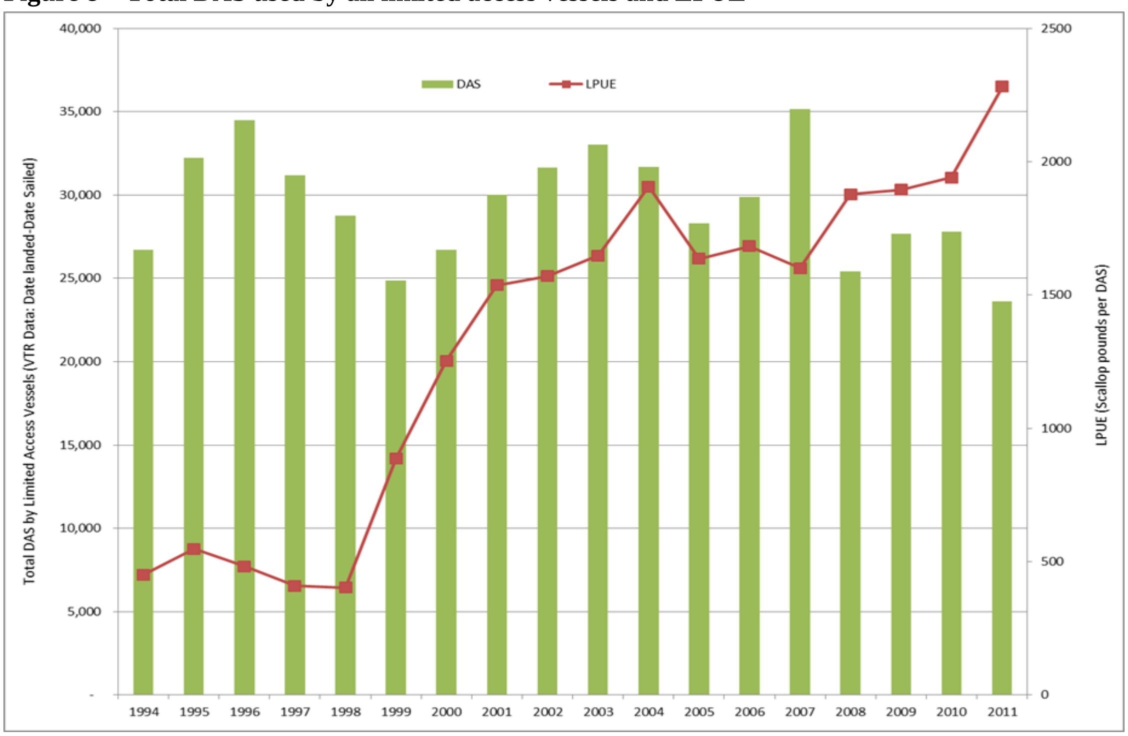
The scallop fishery is facing a decline in 2013. Recruitment has been below average for several years on Georges Bank and overall biomass is lower than previous years. Most of the scallop access areas have lower biomass than years past, and several areas in the Mid-Atlantic will be closed in 2013 to protect smaller scallops for future access. Total catch in 2013 will be about 30% less than catch levels in 2012 and 2011. Catch is expected to increase again over 22,000 mt (about 50M lbs.) starting in 2016, if the high levels of recruitment in the Mid-Atlantic grow as projected (Figure 8).

Figure 7 – Scallop revenue by permit category and fishing year



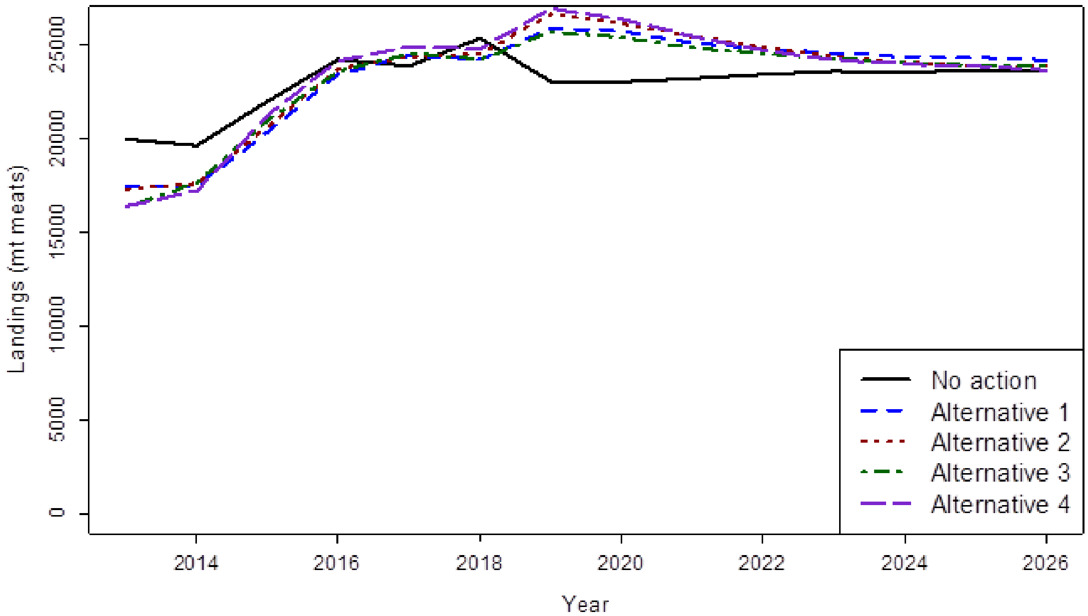
Note: Data in 2011 inflation adjusted prices. Source: dealer data.

Figure 8 – Total DAS used by all limited access vessels and LPUE



Note: date landed – date sailed from VTR data

Figure 9 – Projection of future scallop catch under proposed FW25 specifications for FY2013 (Alternative 2)



Most limited access category effort is from vessels using scallop dredges, including small dredges. The number of vessels using scallop trawl gear has decreased continuously and has been at 11 full-time trawl vessels since 2006 (Section 1.1.6, Appx. I, FRW 24). Furthermore, according to the 2009-2010 VTR data, the majority of these vessels (10 out of 11 in 2010) landed scallops using dredge gear even though they had a trawl permit. Most general category effort is, and has been, from vessels using scallop dredge and other trawl gear. The percentages of scallop landings show that landings made with a scallop dredge in 2012 continue to be the highest compared to other general category gear types (Table 18 and Table 22, A Appx. I, FRW 24).

Both full-time and part-time limited access vessels had a high dependence on scallops as a source of their income. Full-time limited access vessels had a high dependence on scallops as a source of their income and the majority of the full-time vessels (94%) derived more than 90% of their revenue from the scallop fishery in 2011 (Table 37, Appx. I, FRW 24). Comparatively, part-time limited access vessels were less dependent on the scallop fishery in 2011, with only 37% of part-time vessels earning more than 90% of their revenue from scallops (Table 37, ibid).

General category permit holders (IFQ and NGOM) are less dependent on scallops compared to vessels with limited access permits. In 2011, 43% of IFQ permitted vessels earned greater than 50% of their revenue from scallops. Among active NGOM permitted vessels (that did not also have a limited access permit), 88% had no landings with scallops in 2011. Scallops still comprise the largest proportion of the revenue for IFQ general category vessels, accounting for 38.6% of these vessels revenue. Scallops still comprise the largest proportion of the revenue for IFQ general category vessels, accounting for 38.6% of these vessels revenue (Table 39 Appx I, FRW 24). For NGOM vessels (that did not also have a limited access permit) scallop landings accounted for less than 1% of revenue in 2011 (ibid).

The number of crew positions, measured by summing the average crew size of all active limited access vessels on all trips that included scallops, has increased slightly from 2,172 positions in 2007 to 2,262 positions in 2011 (a 4% increase) (Table 47, Appx. I, FRW 24). Broken out by home port state, the number of crew positions has stayed relatively constant during the past five years. Limited access vessels with a home port in Massachusetts and New Jersey experienced the largest percentage increase (5%: 969 to 1015 crew positions in MA and 15%: 490 to 564 crew positions in NJ). However, total crew effort in the limited access fishery, measured by crew days, declined from 207,088 to 160,355 (23%, Table 50, Appx I, FRW 24) from 2007 to 2011. The number of crew days on general category vessels followed a similar pattern as the general category crew positions and trips, with large declines in 2008 and 2010, but then an increase in days in 2011(Table 52, ibid.).

The landed value of scallops by port landing fluctuated from 1994 through 2011 for many ports. In 2011 New Bedford accounted for 53% of all scallop landings and it continues to be the number one port for scallop landings. Included in the top five scallop ports are: Cape May, NJ; Newport News, VA; Barnegat Light/Long Beach NJ; and Seaford, VA. It is also fair to describe the fishing activities in these ports as highly reliant on the ex-vessel revenue generated from scallop landings as scallop landings represent greater than 75% of all ex-vessel revenue for each of the ports (Table 59, Appx. I, FRW 24). There are also a number of ports with a comparatively small amount of ex-vessel revenue from scallops but where that scallop revenue represents a vast majority of the revenue from landings of all species (Table 60, ibid.). In 2011, in the ports of Newport News, VA and Seaford, VA; revenue from scallop landings accounted for 89.0% and 99.9% of all ex-vessel revenue respectively (Table 60, ibid.).

In terms of home state, the vessels from MA landed over 45% of scallops in 2010 and 2011 fishing years, followed by NJ with about 24.5% of all scallops landed by vessels homeported in this state (Appx. I, FRW 24). Scallops also comprise a significant proportion of revenue (and landings) from all species with over 90% of total revenue in VA, over 75% of total revenue in NC, over 60% of total revenue in MA and over 68% of total revenue in NJ (ibid.).

As in previous years, the largest numbers of permitted limited access scallop vessels have home ports of New Bedford, MA and Cape May, NJ, which represent 39% and 21% of all limited access vessels, respectively (Table 62, Appx. I, FRW 24). New Bedford also has the greatest number of general category scallop vessels, but while limited access vessels are mostly concentrated in the ports of New Bedford and Cape May, general category vessels are more evenly distributed throughout coastal New England. In addition to New Bedford, Point Judith, RI, Gloucester, MA, Boston, MA, Cape May, NJ and Barnegat Light, NJ, are all the homeport of at least 20 vessels with general category scallop permits (Table 63, ibid).

6.5.5 Small-Mesh Bottom Trawl Fishing on Georges Bank

This action considers two measures that could affect fisheries that use small-mesh bottom trawls on Georges Bank. It may adopt a requirement that these fisheries use selective trawl gear to reduce catches of GB yellowtail flounder, and it may adopt a sub-ACL for GB yellowtail flounder for small mesh fisheries. The two primary fisheries that use small-mesh on GB are the loligo squid and whiting fisheries. Often vessels make trips that land both species, so it is not always possible to assign a trip to one fishery or the other. This section provides a brief overview of fishing activity for those two fisheries.

Loligo squid and whiting are primarily caught by bottom otter trawls. The following analyses focus on normal bottom otter trawls, separator trawls, Ruhle trawls, and beam trawls that target these species on Georges Bank. There is also a small percentage of landings that cannot be attributed to gear that is included in the summaries. All weights are converted to live weights. Data are reported for calendar years, consistent with the way the loligo squid fishery is monitored. All data was extracted from the NMFS/NERO DMIS database.

A small number of vessels landed squid or whiting from the GB yellowtail flounder stock area in 2010 and 2011 (Table 44). Most loligo squid landings in 2010 and 2011 were taken in the SNE/MA area, with <10% of the landings taken in the GB yellowtail flounder stock area (Table 45). Over 95% of the loligo squid caught in the GB yellowtail flounder stock area is caught in SAs 525 and 562 (Table 47). With respect to whiting, however, the GB yellowtail flounder stock area provided between 44% and 48% of total whiting landings (

Table 46). Whiting is more broadly distributed in the GB yellowtail flounder stock area, with 25-30% taken in each of the SAs 522 and 525, and most of the remainder in SA 562 (Table 48).

Table 44 - Number of vessels landing whiting or loligo squid in 2010 and 2011 by broad stock area

Stock Area	2010	2011
Gulf of Maine	32	34
521	8	7
GBYTF Area	34	30
SNE/MA	320	296
Other	30	47
Total	**424**	**414**

Table 45 - Landings of loligo squid by broad stock area, 2010 and 2011 (pounds, live weight)

Stock Area	2010	2011
Gulf of Maine	38,806	17,112
521	4,154	647
GBYTF Area	1,385,159	1,315,051
SNE/MA	15,700,205	20,888,013
Other	60,315	117,520
Total	**17,188,639**	**22,338,343**
GB YTF Area as %	8%	6%

Squid and whiting revenues from the GB yellowtail flounder stock area accounted for 24% of the revenues from these species on 2010, and 17% in 2011. For the trips that caught whiting or squid in the GB yellowtail flounder stock area, revenues from these two species accounted for over 60% of trip revenues. Whiting revenues were larger than squid revenues on these trips – squid accounted for 24-33% of the revenues from these two species (Table 49). Most of the landings from this area were in Massachusetts, with 57% of the revenues in 2010 and 72% of the revenues in 2011 from that state. Connecticut, Rhode Island, and New York were the primary other states with revenues from this area (Table 50).

Table 46 - Landings of whiting (silver and offshore hake) by broad stock area, 2010 and 2011 (pounds, live weight)

Stock Area	2010	2011
Gulf of Maine	1,664,758	1,549,340
521	74,296	96,190
GBYTF Area	8,747,531	7,717,515
SNE/MA	7,684,438	7,979,919
Other	183,539	220,894
Total	18,354,562	17,563,858
GB YTF Area as %	48%	44%

Table 47 - Percent of loligo squid landings from each statistical area in the GB Yellowtail Flounder Stock Area

AREA	2010	2011	Total
522	4%	1%	3%
525	57%	74%	66%
543	0%	0%	0%
561	0%	0%	0%
562	39%	24%	32%
Total	**100%**	**100%**	**100%**

Table 48 - Percent of whiting landings from each statistical area in the GB Yellowtail Flounder Stock Area

AREA	2010	2011	Total
522	26.06%	26.62%	26.33%
525	25.73%	39.68%	32.27%
543	0.30%	0.39%	0.34%
561	0.01%	0.01%	0.01%
562	47.90%	33.29%	41.05%
Total	**100.00%**	**100.00%**	**100.00%**

Table 49 - Revenue on squid and/or whiting trips by broad stock areas

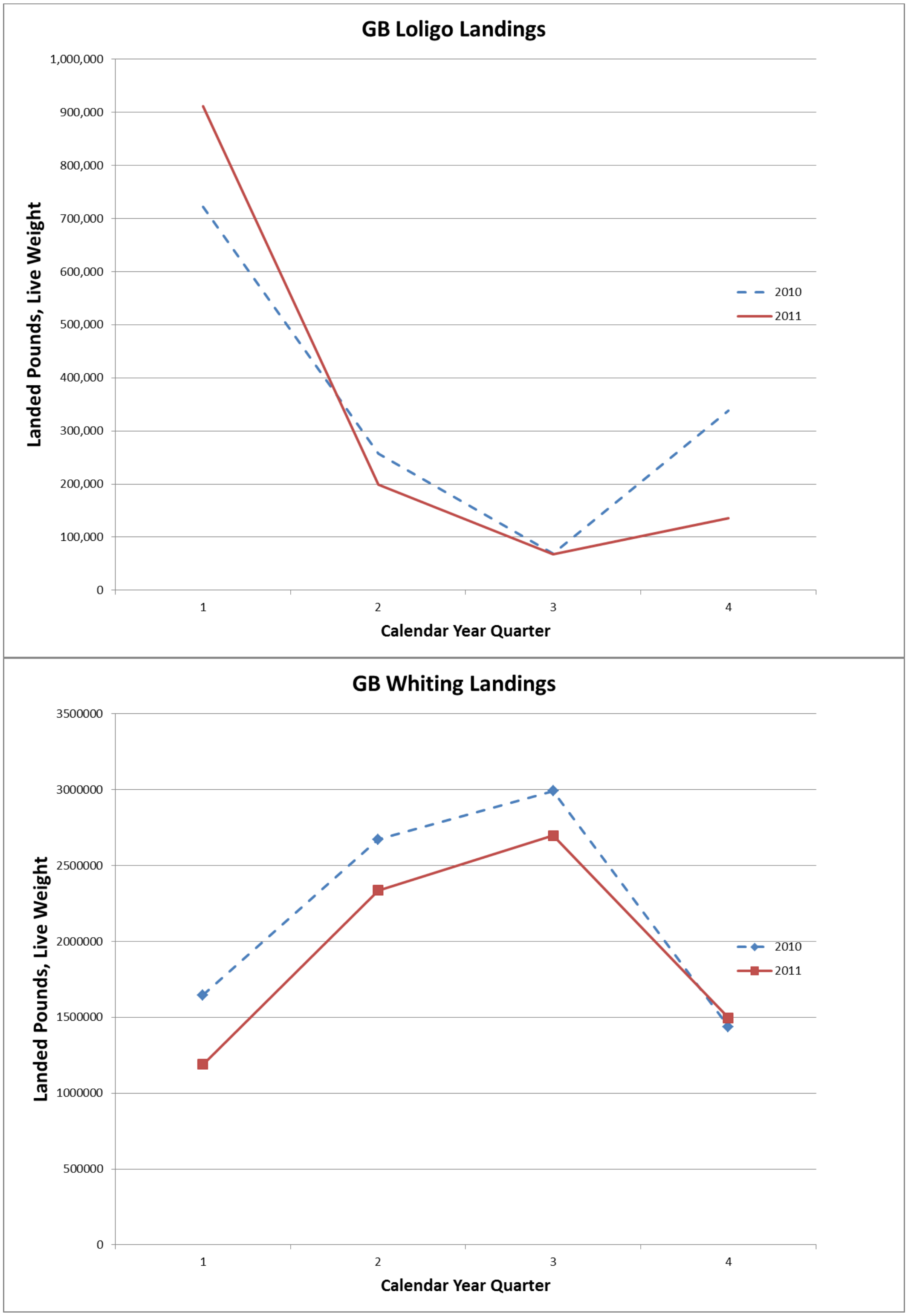
Year	Stock Area	Squid Trips	Whiting Trips	Total Revenue
2010	Gulf of Maine	$42,269	$1,078,620	$6,849,033
	521	$6,770	$32,410	$1,369,161
	GBYTF Area	$1,638,859	$5,275,521	$10,172,184
	SNE/MA	$16,286,126	$4,780,527	$49,141,364
	Other	$58,925	$93,645	$600,828
	Total	**$18,032,950**	**$11,260,722**	**$68,132,570**
2011	Gulf of Maine	$17,318	$999,571	$10,533,557
	521	$952	$77,317	$1,877,336
	GBYTF Area	$1,636,814	$4,725,911	$9,930,530
	SNE/MA	$24,443,913	$5,302,990	$70,296,182
	Other	$155,012	$110,631	$1,104,848
	Total	**$26,254,009**	**$11,216,421**	**$93,742,453**
Grand Total		**$44,286,959**	**$22,477,143**	**$161,875,022**

Table 50 - Revenue from squid and whiting trips by state

Year	State	Squid Trips	Whiting Trips	Total Revenue
2010		$5,646	$109,616	$124,367
	CT	$167,228	$846,720	$1,169,255
	MA	$600,953	$3,021,961	$5,846,492
	ME	$0	$239	$53,647
	NY	$347,032	$910,419	$1,399,220
	RI	$517,999	$386,567	$1,579,202
	Total	**$1,638,859**	**$5,275,521**	**$10,172,184**
2011		$5,078	$43,050	$55,195
	CT	$82,915	$429,308	$588,666
	MA	$875,376	$3,805,886	$7,136,582
	ME	$0	$10	$10,443
	NJ	$1,134	$49	$1,433
	NY	$347,829	$276,891	$664,824
	RI	$324,482	$170,718	$1,473,387
	Total	**$1,636,814**	**$4,725,911**	**$9,930,530**
Grand Total		**$3,275,672**	**$10,001,432**	**$20,102,714**

Both loligo and whiting landings have a distinct seasonal component (Figure 10). Loligo landings are high in the fall and winter (first and fourth calendar year quarters) and decline in the spring and summer. Whiting landings reflect the opposite pattern.

Figure 10 – Seasonal pattern of loligo and whiting landings from Georges Bank (calendar years)



7.0 Environmental Consequences – Analysis of Impacts

7.1 Biological Impacts

Biological impacts discussed below focus on expected changes in fishing mortality for regulated multispecies stocks. Changes in fishing mortality may result in changes in stock size. Impacts on essential fish habitat and endangered or threatened species are discussed in separate sections. Impacts are discussed in relation to impacts on regulated multispecies and other species.

Throughout this section, impacts are often evaluated using an analytic technique that projects future stock size based on a recent age-based assessment. These projections are known to capture only part of the uncertainties that are associated with the assessments projections. There is evidence that in the case of multispecies stocks the projections tend to be optimistic when they extend beyond a short-term period (1-3 years). This means that the projections tend to over-estimate future stock sizes and under-estimate future fishing mortality. Attempts to find a way to make the projections more accurate have so far have proven unsuccessful. These factors should be considered when reviewing impacts that use this tool.

7.1.1 Updates to Status Determination Criteria, Formal Rebuilding Programs and Annual Catch Limits

7.1.1.1 Gulf of Maine Cod Rebuilding Strategy

7.1.1.1.1 Option 1: No Action

Impacts on regulated groundfish

This option would keep the current rebuilding strategy for Gulf of Maine cod, which targets rebuilding by 2014 with a 50% (median) probability of success. The direct biological impacts of this measure would be on Gulf of Maine cod. However because the stock is not projected to be rebuilt by 2014, fishing mortality would be based on 75% F_{MSY} in 2014 and subsequently on incidental bycatch (i.e., set as close to zero as possible) starting in 2015. Option 1 would result in a fishing mortality that would be lower than in Option 2, and thus Option 1 would be expected to result in more rapid rebuilding of the stock.

Three year projections from the two assessment models (base case and m-ramp) are provided (Figure 11 and Figure 12). Differences between the two models are discussed in detail under Option 2.

If F=0, it would take 6 years to rebuild the Gulf of Maine cod stock, which is 2 years earlier than Option 2/Sub-Option A and 4 years earlier than Option 2/Sub-Option B. Under No Action, the stock would not rebuild by 2014 but would rebuild by 2020 if F=0 (Figure 17and Figure 18).

This option could also have indirect effects on other regulated groundfish stocks, since Gulf of Maine cod is only part of a complex fishery. For example, during some times of the year, Gulf of Maine cod and Gulf of Maine haddock are caught on the same fishing trips. Limiting Gulf of Maine cod catches may reduce catches of Gulf of Maine haddock because it may deter some groundfish fishing trips (as compared to Option 2).

Impacts on other species

When compared to Option 2, this option may indirectly reduce interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips because it may lead to fewer groundfish fishing trips in the Gulf of Maine cod stock area. Counter to this possibility is the chance that vessels that would fish for Gulf of Maine cod under Option 2, may target other species as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, should prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 11 - Projected GOM cod stock size under Option 1 base case scenario

Figure 12 - Projected GOM cod stock size under Option 1 M ramp scenario

7.1.1.1.2 Option 2: Revised Rebuilding Strategy for Gulf of Maine Cod

<u>Sub-Option A</u>

Impacts on regulated groundfish

This option would adopt a new rebuilding strategy for Gulf of Maine cod and would target rebuilding by 2022 with a 50% (median) probability of success. The assumption is that this change would lead to an additional change in management measures that would allow fishermen to land this stock. The direct impacts of this measure would be on Gulf of Maine cod. The fishing mortality (initially greater than 75% F_{MSY}, but reduced after 2014 would be consistent with the ABC Control Rule adopted in A16) necessary to rebuild by 2022 would be greater than would be expected under Option 1/No Action. This would be expected to result in slower rebuilding of the stock. Under Option 2/Sub-Option A, the stock would rebuild by 2022 (Figure 13 and Figure 14). The rebuilding trajectory for this option is compared to the trajectory for F=0 and No Action (Option 1) in Figure 17and Figure 18.The stock would rebuild two years later than the rebuilding date expected under Option 1/No Action, and two years earlier than the rebuilding date expected under Option 2/Sub-Option B. This strategy is developed to be more conservative compared to Option 2/Sub-Option B.

This option could also have indirect effects on other regulated groundfish stocks, since Gulf of Maine cod is only part of a complex fishery. During some times of the year, Gulf of Maine cod and Gulf of Maine haddock are caught on the same fishing trips. Increasing Gulf of Maine cod catches (as compared to Option 1/No Action) may increase catches of Gulf of Maine haddock because it may encourage more groundfish fishing trips. Since this stock is managed with ACLs and AMs, fishing mortality targets would not be expected to be exceeded.

Several provisions of this measure may slow the pace of rebuilding. First, this program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary.

Second, there is little difference in the rebuilding time needed under the accepted base case or M-ramp model (M=0.2 in projections) for GOM cod; no reference points are available for the M-ramp model. However the catches estimated in the out years and the SSB_{MSY} are different between the models. The M-ramp projection assumes a change in M back to 0.2. The SARC 55 Panel concluded that if M is currently 0.4 then it seemed more reasonable to assume that in the short-term M would remain at 0.4 rather than reduce to 0.2. However, a change back to 0.2 is required to rebuild the stock. It is not known when M will change back to 0.2 in the future for the M-ramp formulation so interpretation and development of rebuilding plans using the M-ramp model is more difficult. This option would not rebuild as quickly as Option 1/No Action.

Impacts on other species

When compared to Option 1/No Action, this option may indirectly increase interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips if it leads to more groundfish fishing trips. Counter to this possibility is the chance that vessels that would fish for other species under Option 1/No Action may target Gulf of Maine cod as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, would prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 13 - Projected GOM cod stock size under Option 2, 8 year rebuilding base case scenario

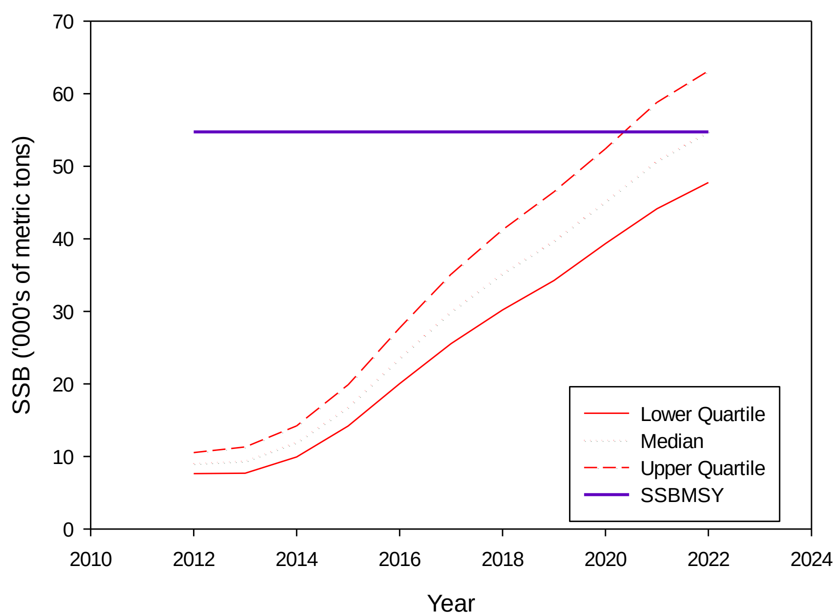
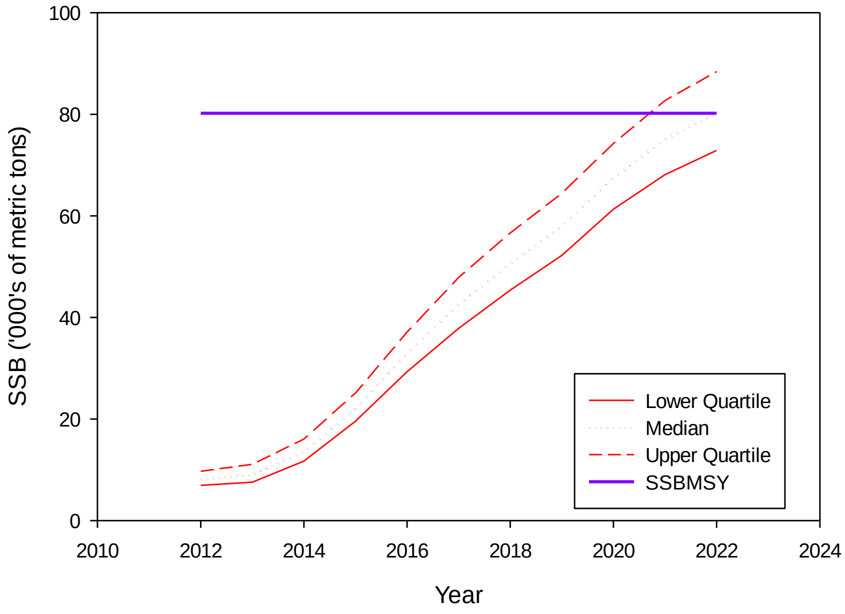


Figure 14 - Projected GOM cod stock size under Option 2, 8 year rebuilding M ramp scenario



<u>Sub-Option B</u>

Impacts on regulated groundfish

This option would adopt a new rebuilding strategy for Gulf of Maine cod and would target rebuilding by 2024 with a 50% (median) probability of success. The assumption is that this change would lead to an additional change in management measures that would allow fishermen to land this stock. The direct impacts of this measure would be on Gulf of Maine cod. The fishing mortality (initially greater than 75% F_{MSY}, but reduced after 2014 would be consistent with the ABC Control Rule adopted in A16) necessary to rebuild by 2024 would be greater than would be expected under Option 1/No Action. This would be expected to result in slower rebuilding of the stock. Under Option 2/Sub-Option B, the stock would rebuild by 2024 (Figure 15 and Figure 16). The rebuilding trajectory for this option is compared to the trajectory for F=0 and No Action (Option 1) in Figure 17 and Figure 18.The stock would rebuild four years later than the rebuilding date expected under Option 1/No Action, and two years later than the rebuilding date expected under Option 2/Sub-Option A. This option represents the maximum rebuilding period of ten years from the implementation date of the program. The rebuilding period is extended to the maximum period in order to minimize the impacts on fishing communities, as described in Section XXX.

This option could also have indirect effects on other regulated groundfish stocks, since Gulf of Maine cod is only part of a complex fishery. During some times of the year, Gulf of Maine cod and Gulf of Maine haddock are caught on the same fishing trips. Increasing Gulf of Maine cod catches (as compared to Option 1/No Action) may increase catches of Gulf of Maine haddock because it may encourage more groundfish fishing trips. Since this stock is managed with ACLs and AMs, fishing mortality targets would not be expected to be exceeded.

Several provisions of this measure may slow the pace of rebuilding. First, this program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary.

Second, there is little difference in the rebuilding time needed under the accepted base case or M-ramp model (M=0.2 in projections) for GOM cod; no reference points are available for the M-ramp model. However the catches estimated in the out years and the SSB_{MSY} are different between the models. The M-ramp projection assumes a change in M back to 0.2. The SARC 55 Panel concluded that if M is currently 0.4 then it seemed more reasonable to assume that in the short-term M would remain at 0.4 rather than reduce to 0.2. However, a change back to 0.2 is required to rebuild the stock. It is not known when M will change back to 0.2 in the future for the M-ramp formulation so interpretation and development of rebuilding plans using the M-ramp model is more difficult. This option would not rebuild as quickly as Option 1/No Action.

Impacts on other species

When compared to Option 1/No Action, this option may indirectly increase interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips if it leads to more groundfish fishing trips. Counter to this possibility is the chance that vessels that would fish for other species under Option 1/No Action may target Gulf of Maine cod as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, would prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 15 - Projected GOM cod stock size under Option 2, 10 year rebuilding base case scenario

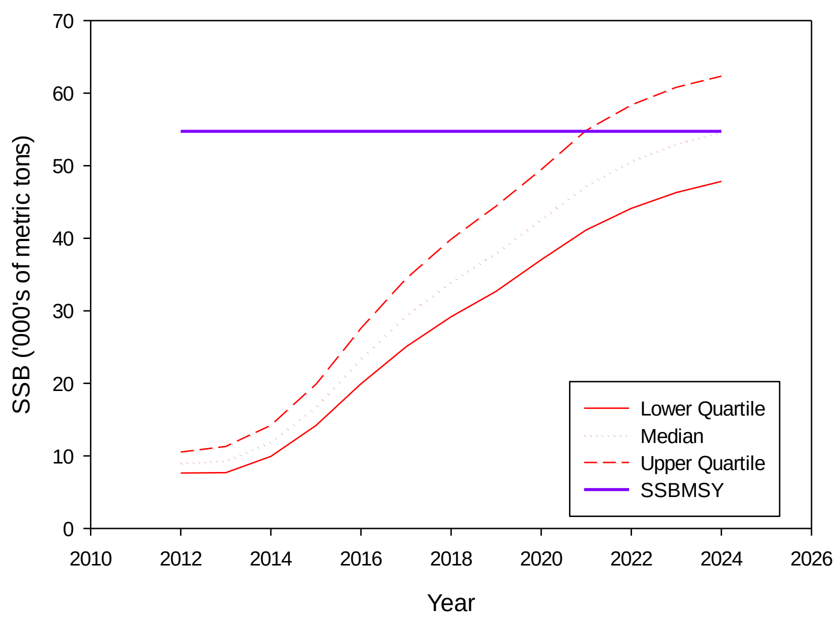


Figure 16 - Projected GOM cod stock size under Option 2, 10 year rebuilding M ramp scenario

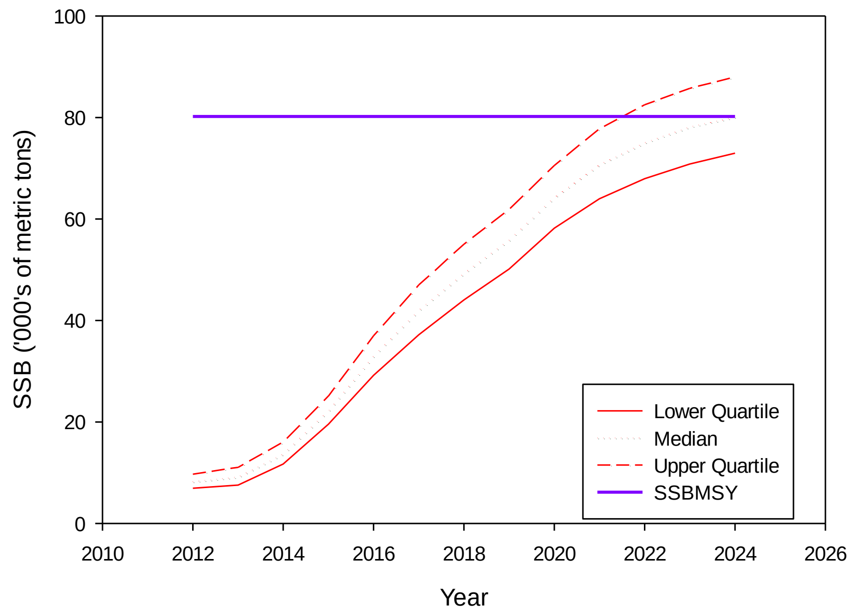


Figure 17 – Projected median SSB_{MSY} for GOM cod rebuilding strategies, using the base case model

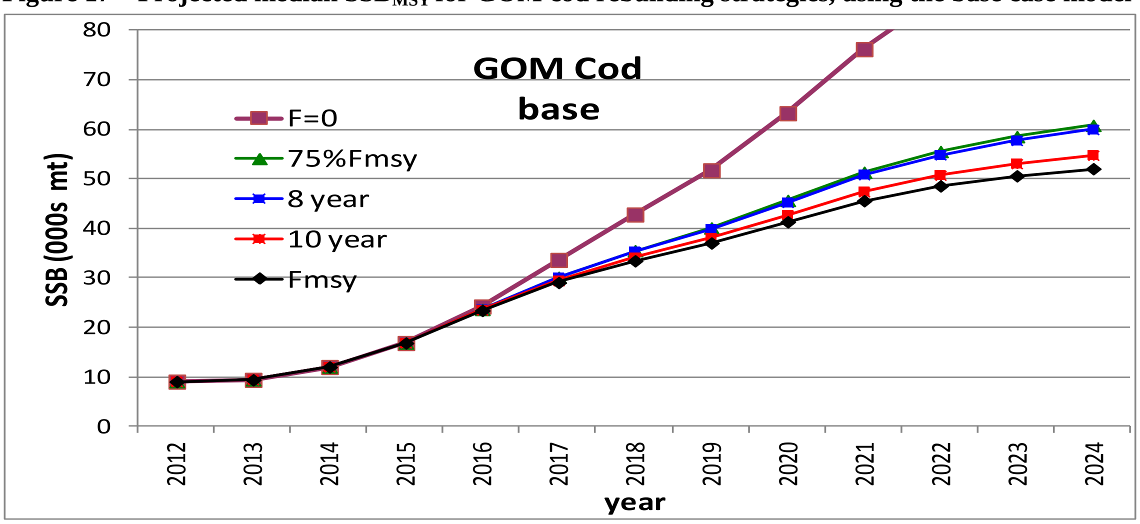
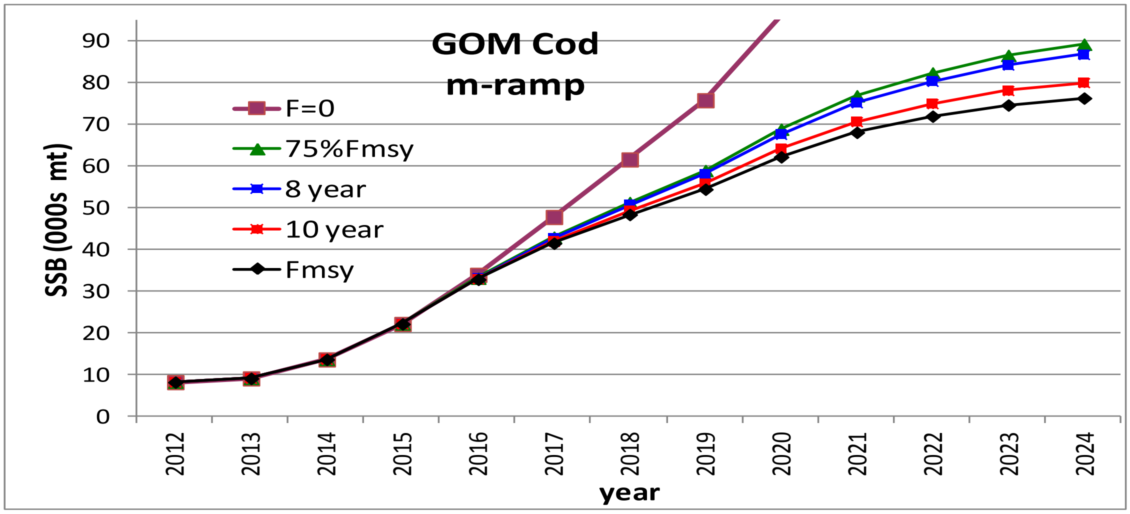


Figure 18- Projected median SSB_{MSY} for GOM cod rebuilding strategies, using the m-ramp model



7.1.1.1.3 Option 3: Rebuilding Plan Review Analysis for Gulf of Maine Cod

Impacts on regulated groundfish

Option 3 would require an analysis of the rebuilding plan using the described criteria. This is an administrative alternative and is not expected to impact Gulf of Maine cod or other species. Compared to the No Action alternative and Option 2, this alternative would not impact Gulf of Maine cod or other regulated groundfish species.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.1.2 Revised American Plaice Rebuilding Strategy

7.1.1.2.1 Option 1: No Action

Impacts on regulated groundfish

This option would keep the current rebuilding strategy for American plaice, which targets rebuilding by 2014 with a 50% (median) probability of success. The direct biological impacts of this measure would be on American plaice. However because the stock is not projected to be rebuilt by 2014, fishing mortality would be based on 75% F_{MSY} in 2014 and subsequently on incidental bycatch (i.e., set as close to zero as possible) starting in 2015. Three year projections from the assessment model are provided (Figure 19). Option 1 would result in a fishing mortality that would be lower than in Option 2, and thus Option 1 would be expected to result in more rapid rebuilding of the stock. If F=0, it would take 4 years to rebuild the Gulf of Maine cod stock, which is 3 years earlier than Option 2/Sub-Option A, 4 years earlier than

Option 2/Sub-Option B, and 6 years earlier than Option 2/Sub-Option C. Under Option 1/No Action, the stock would not rebuild by 2014, but the stock would rebuild by 2018 if F=0 (Figure 23).

This option could also have indirect effects on other regulated groundfish stocks, since American plaice is only part of a complex fishery. For example, during some times of the year, American plaice and witch flounder are caught on the same fishing trips. Limiting American plaice catches may reduce catches of witch flounder because it may deter some groundfish fishing trips (as compared to Option 2).

Impacts on other species

When compared to Option 2, this option may indirectly reduce interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips because it may lead to fewer groundfish fishing trips in the American plaice stock area. Counter to this possibility is the chance that vessels that would fish for American plaice under Option 2, may target other species as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, should prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 19 - Projected American Plaice stock size under Option 1

7.1.1.2.2 Option 2: Revised Rebuilding Strategy for American Plaice

Sub-Option A

Impacts on regulated groundfish

This option would adopt a new rebuilding strategy for American plaice and would target rebuilding by 2021 with a 50% (median) probability of success. The assumption is that this change would lead to an additional change in management measures that would allow fishermen to land this stock. The direct impacts of this measure would be on American plaice. The fishing mortality (initially greater than 75% F_{MSY}, but reduced after 2014 would be consistent with the ABC Control Rule adopted in A16) necessary to rebuild by 2021 would be greater than would be expected under Option 1/No Action. This would be expected to result in slower rebuilding of the stock. Under Option 2/Sub-Option A, the stock would rebuild by 2021 (

Figure 20). The rebuilding trajectory for this option is compared to the trajectory for F=0 and No Action (Option 1) in Figure 23.The stock would rebuild three years later than the rebuilding date expected under Option 1/No Action, one year earlier than the rebuilding date expected under Option 2/Sub-Option B, and three years earlier than the rebuilding date expected under Option 2/Sub-Option C. This strategy is the most conservative compared to Option 2/Sub-Option B and Option2/Sub-Option C.

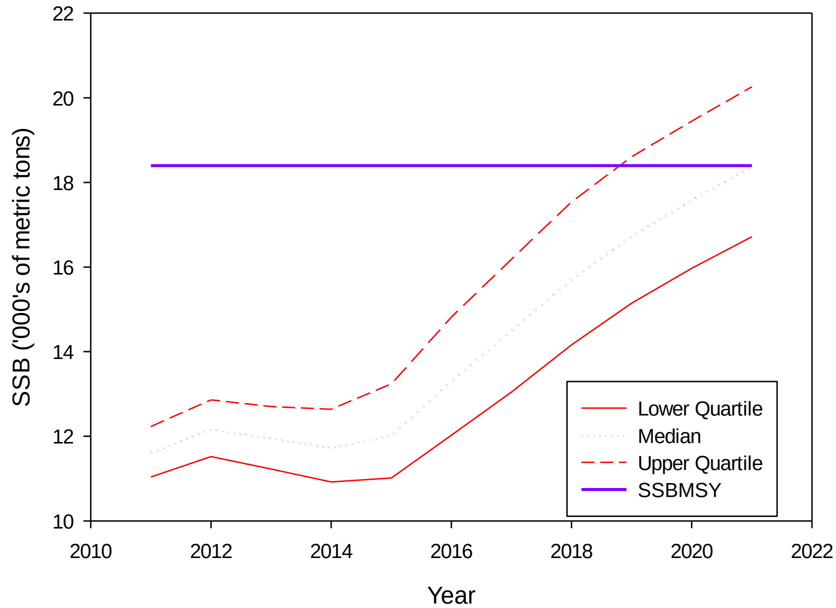
This option could also have indirect effects on other regulated groundfish stocks, since American plaice is only part of a complex fishery. During some times of the year, American plaice and witch flounder are caught on the same fishing trips. Increasing American plaice catches (as compared to Option 1/No Action) may increase catches of witch flounder because it may encourage more groundfish fishing trips. Since this stock is managed with ACLs and AMs, fishing mortality targets would not be expected to be exceeded.

One provision of this measure may slow the pace of rebuilding. This program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary. This option would not rebuild as quickly as Option 1/No Action.

Impacts on other species

When compared to Option 1/No Action, this option may indirectly increase interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips if it leads to more groundfish fishing trips. Counter to this possibility is the chance that vessels that would fish for other species under Option 1 /No Action may target American plaice as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, would prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 20 - Projected American Plaice stock size under Option 2, 7 year rebuilding scenario



<u>Sub-Option B</u>

Impacts on regulated groundfish

This option would adopt a new rebuilding strategy for American plaice and would target rebuilding by 2022 with a 50% (median) probability of success. The assumption is that this change would lead to an additional change in management measures that would allow fishermen to land this stock. The direct impacts of this measure would be on American plaice. The fishing mortality (initially greater than 75% F_{MSY}, but reduced after 2014 would be consistent with the ABC Control Rule adopted in A16) necessary to rebuild by 2022 would be greater than would be expected under Option 1/No Action. This would be expected to result in slower rebuilding of the stock. Under Option 2/Sub-Option B, the stock would rebuild by 2022 (Figure 21). The rebuilding trajectory for this option is compared to the trajectory for F=0 and No Action (Option 1) in Figure 23.The stock would rebuild four years later than the rebuilding date expected under Option 1/No Action, one year later than the rebuilding date expected under Option 2/Sub-Option A, and two years earlier than the rebuilding date expected under Option 2/Sub-Option C.

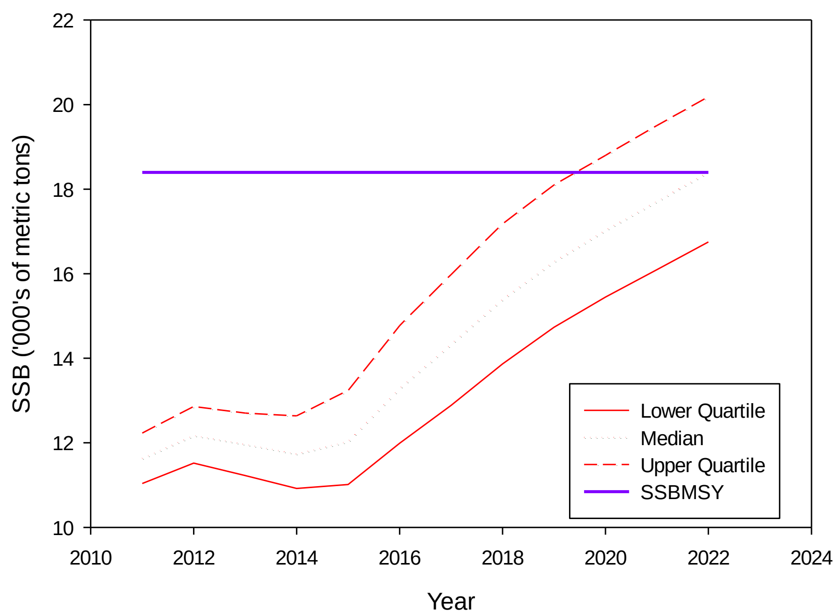
This option could also have indirect effects on other regulated groundfish stocks, since American plaice is only part of a complex fishery. During some times of the year, American plaice and witch flounder are caught on the same fishing trips. Increasing American plaice catches (as compared to Option 1/No Action) may increase catches of witch flounder because it may encourage more groundfish fishing trips. Since this stock is managed with ACLs and AMs, fishing mortality targets would not be expected to be exceeded.

One provision of this measure may slow the pace of rebuilding. This program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary. This option would not rebuild as quickly as Option 1/No Action.

Impacts on other species

When compared to Option 1/No Action, this option may indirectly increase interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips if it leads to more groundfish fishing trips. Counter to this possibility is the chance that vessels that would fish for other species under Option 1 /No Action may target American plaice as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, would prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 21 - Projected American Plaice stock size under Option 2, 8 year rebuilding scenario



Sub-Option C

Impacts on regulated groundfish

This option would adopt a new rebuilding strategy for American plaice and would target rebuilding by 2024 with a 50% (median) probability of success. The assumption is that this change would lead to an additional change in management measures that would allow fishermen to land this stock. The direct impacts of this measure would be on American plaice. The fishing mortality (initially greater than 75% F_{MSY}, but reduced after 2014 would be consistent with the ABC Control Rule adopted in A16) necessary to rebuild by 2024 would be greater than would be expected under Option 1/No Action. This would be expected to result in slower rebuilding of the stock. Under Option 2/Sub-Option B, the stock would rebuild by 2024 (Figure 22). The rebuilding trajectory for this option is compared to the trajectory for F=0 and No Action (Option 1) in Figure 23.The stock would rebuild six years later than the rebuilding date expected under Option 1/No Action, three years later than the rebuilding date expected under Option

2/Sub-Option A, and two years later than the rebuilding date expected under Option 2/Sub-Option B. This option represents the maximum rebuilding period of ten years from the implementation date of the program. The rebuilding period is extended to the maximum period in order to minimize the impacts on fishing communities, as described in Section XXX.

This option could also have indirect effects on other regulated groundfish stocks, since American plaice is only part of a complex fishery. During some times of the year, American plaice and witch flounder are caught on the same fishing trips. Increasing American plaice catches (as compared to Option 1/No Action) may increase catches of witch flounder because it may encourage more groundfish fishing trips. Since this stock is managed with ACLs and AMs, fishing mortality targets would not be expected to be exceeded.

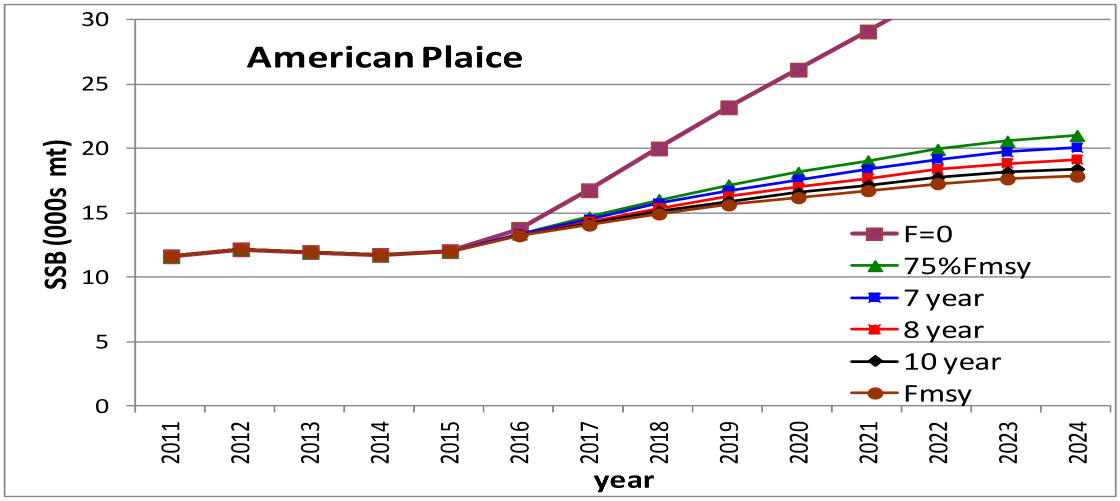
One provision of this measure may slow the pace of rebuilding. This program is designed to use 75%F_{MSY} initially; however, if progress is not made, it is possible that $F_{rebuild}$ may become necessary. This option would not rebuild as quickly as Option 1/No Action.

Impacts on other species

When compared to Option 1/No Action, this option may indirectly increase interactions between the groundfish fishery and other species that are caught as bycatch on groundfish fishing trips if it leads to more groundfish fishing trips. Counter to this possibility is the chance that vessels that would fish for other species under Option 1 /No Action may target American plaice as a substitute. It is not clear how these two different behaviors would interact and whether the net result would be more or less catches of other species. ACL and AM systems for other stocks, however, would prevent overfishing from occurring in either case and so the possible impacts would not be expected to compromise mortality targets.

Figure 22 - Projected American Plaice stock size under Option 2, 10 year rebuilding scenario

Figure 23- Projected median SSB_{MSY} for American plaice rebuilding strategies



7.1.1.2.3 Option 3: Rebuilding Plan Review Analysis for American Plaice

Impacts on regulated groundfish

Option 3 would require an analysis of the rebuilding plan using the described criteria. This is an administrative alternative and is not expected to impact American plaice or other species. Compared to the No Action alternative and Option 2, this alternative would not impact American plaice or other regulated groundfish species.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.1.3 Annual Catch Limits

7.1.1.3.1 Option 1: No Action

Impacts on regulated groundfish

Two groundfish stocks, white hake and GB yellowtail flounder, do not have FY 2014 specifications defined in previous actions. This option would not set specifications for these stocks in FY 2014; stocks with FY 2014 specifications from previous actions would be maintained and are not discussed further. The distribution of Annual Catch Limits (ACLs) to other fishery sub-components would be maintained.

No Overfishing Level (OFL), Acceptable Biological Catch (ABC) or ACLs would be defined for white hake and GB yellowtail flounder in the multispecies fishery. Without specification of an ACL, a catch would not be allocated to the groundfish fishery (sectors or common pool vessels) and targeted groundfish fishing activity would not occur for these stocks. Catches would not be eliminated because there would probably be incidental catches or bycatch from other fisheries.

The lack of an OFL makes it difficult to determine whether overfishing is likely to occur, however, with limited fishing activity the probability of overfishing would be low. Accountability Measures (AMs) would be maintained but are expected to have a low probability of being triggered without allocations.

In addition to the lack of targeted groundfish fishing activity on stocks without an ACL, certain provisions of the sector management system make it likely that fishing activity could be constrained even for stocks with an ACL that is specified. Current management measures require that a sector stop fishing in a stock area if it does not have ACE for a stock. Fishing can continue on stocks for which the sector continues to have ACE only if the sector can demonstrate it will not catch the ACE-limited stock. What these provisions mean is that in most cases there will be little opportunity for sector vessels to fish on stocks that have an ACL under this option because of this requirement. Since there would be no allocations for white hake and GB yellowtail flounder, the only area that most groundfish fishing activity could occur is the SNE area. As a result, in general this option would be expected to result in dramatically lower fishing mortality and more rapid stock rebuilding than would be the case for Option 2.

An age-based projection model was used to estimate the short-term impacts on stock size of setting the ABCs for white hake and GB yellowtail flounder. These models project the estimated median stock sizes expected to result by limiting catches to the ABC. Recent experience suggests that the projections tend to be biased high, predicting stocks sizes that are larger than realized and fishing mortality rates that are higher than expected (Groundfish Plan Development Team, pers. comm.). The effect of no groundfish allocations was explored in stock projections for the two stocks.

Since there may be catches of these stocks in other fisheries the projections used an estimate of other sub-components catches to approximate the catches that might occur.

White Hake
Under Option 1, white hake SSB projections indicate a further increase in SSB above the SSB_{MSY} (Figure 24). The SSB also increases under Option 2 but it is lower than in Option 1.

GB Yellowtail Flounder
Under Option 1, Georges Bank yellowtail flounder biomass is projected to increase slightly but it remains well below the SSB_{MSY} (Figure 25). Option 1 would allow for greater increases in SSB than Option 2.

Figure 24 - Projected White Hake stock size under Option 1

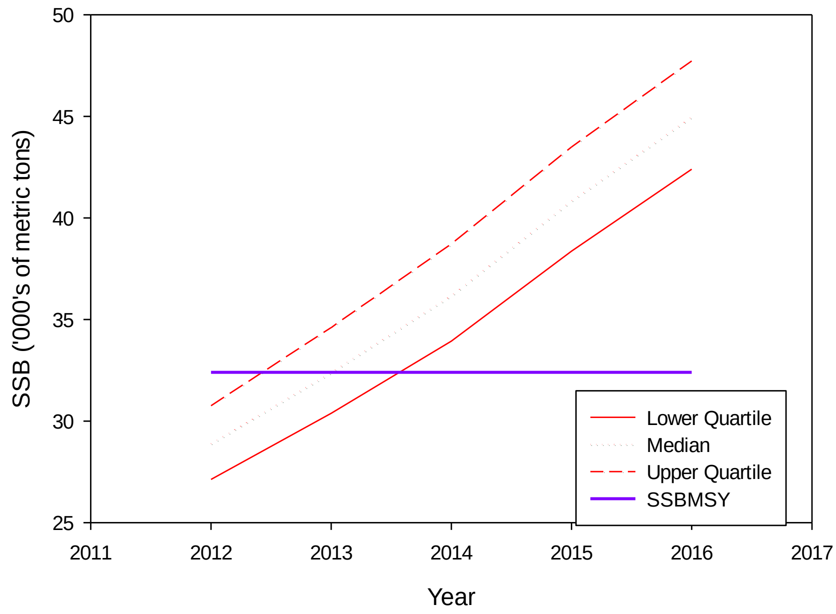
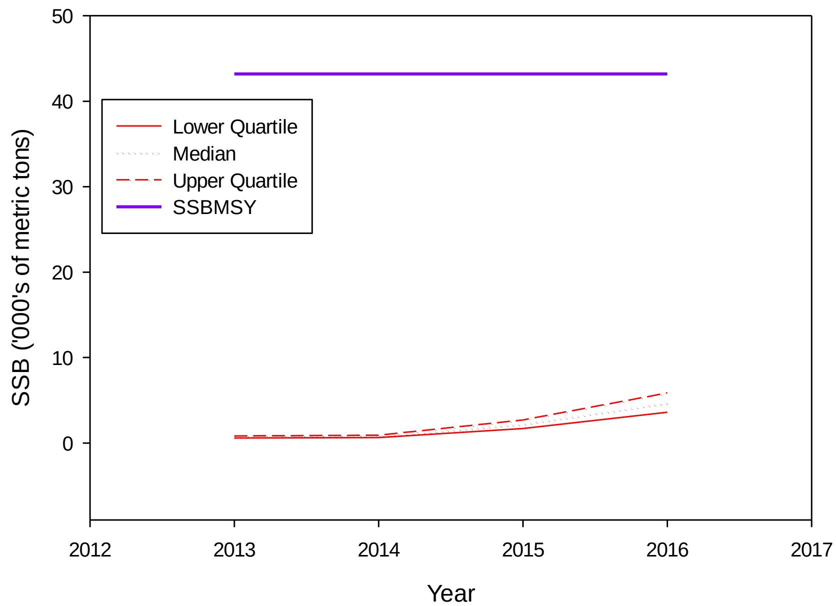


Figure 25 - Projected Georges Bank yellowtail flounder stock size under Option 1



Impacts on other species

Adopting the Option 1/No Action specifications is not expected to have direct impacts on non-groundfish species. Indirect effects are generally likely to be beneficial given the expected reduced groundfish fishing activity. Catches of other species that occur on groundfish trips would decline as a result. There are only limited opportunities for groundfish vessels to target other stocks in other fisheries, so the shifting of effort into other fisheries is not likely to occur on a large scale. These other fisheries will also have ACLs and AMs so while such effort shifts may have economic effects the biological impacts should not be negative. Considering the differences between the ACLs of Option 1/No Action and Option 2, the fishing mortality on other stocks would probably be lower under Option 1/No Action.

7.1.1.3.2 Option 2: Revised Annual Catch Limit Specifications

Option 2 would adopt new ABCs consistent with the best available science for GB yellowtail flounder (FY 2014) and white hake (FY 2014-2016). The ABCs for other stocks were set in previous actions and not discussed here. Generally, increases in SSB are lower than those under Option 1.

Both stocks had recent assessments; short-term projections can be used to estimate the probability of overfishing and short-term changes in stock size. These projections use catches equal to the ABCs that would be adopted if this option is selected. Since the management goal is to keep catches at or below ACLs, and ACLs are always less than the ABC, the projection results would be expected to slightly over-estimate the risk of overfishing and under-estimate future stock size. There is one factor that could modify this conclusion. Sectors are allowed to carry-over up to ten percent of their original ACE allocation to the following year if it is not caught for all stocks except those managed under the US/CA Understanding (e.g., GB yellowtail flounder). This possibility and its effect on stock status is discussed later in this section.

Projected stock sizes are shown in Figure 26 and Figure 27. A comparison of probability of overfishing between the two options is difficult as Option 1/No Action has no OFLs defined for many stocks.

With respect to GB yellowtail flounder there is additional uncertainty in the short-term projection because the most recent assessment shows a retrospective pattern that over-estimates stock size and under-estimates fishing mortality in the terminal year of the assessment. An OFL has been declared undeterminable for this stock because of the large uncertainty about the assessment (Science and Statistical Committee, pers. Comm.). It is unknown whether the proposed ABC will cause overfishing as a result.

White Hake
White hake SSB projections indicate a further increase in SSB above the SSB_{MSY} under this scenario (Figure 26).The stock is above the SSB_{MSY} and is expected to increase during the projected years under Option 1. The SSB also increases under Option 2 but it is lower than in Option 1.

GB Yellowtail Flounder
This stock is well below the SSB_{MSY}. Marginal increases in SSB occur under Option 2 catch of 400 mt (Figure 27). Slightly greater increases in SSB occur under Option 1 than Option 2.

Figure 26 - Projected White Hake stock size under Option 2

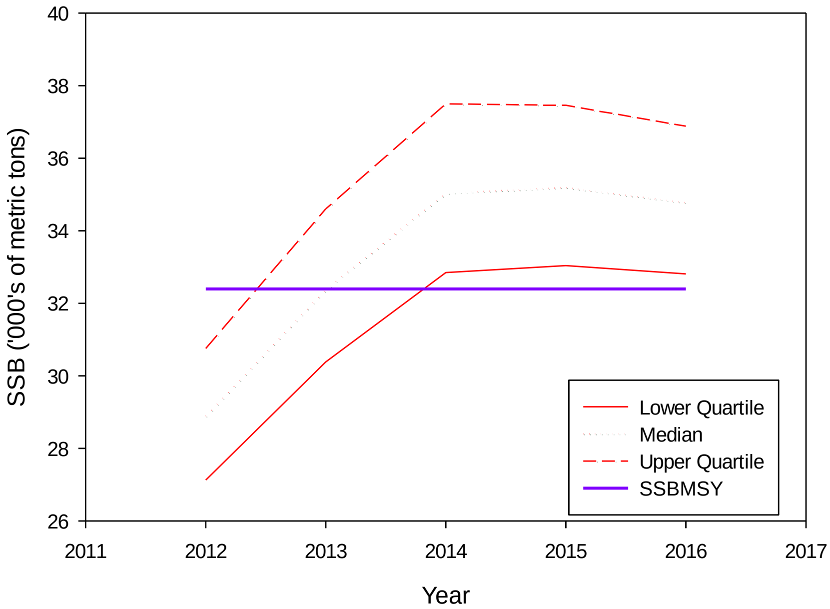
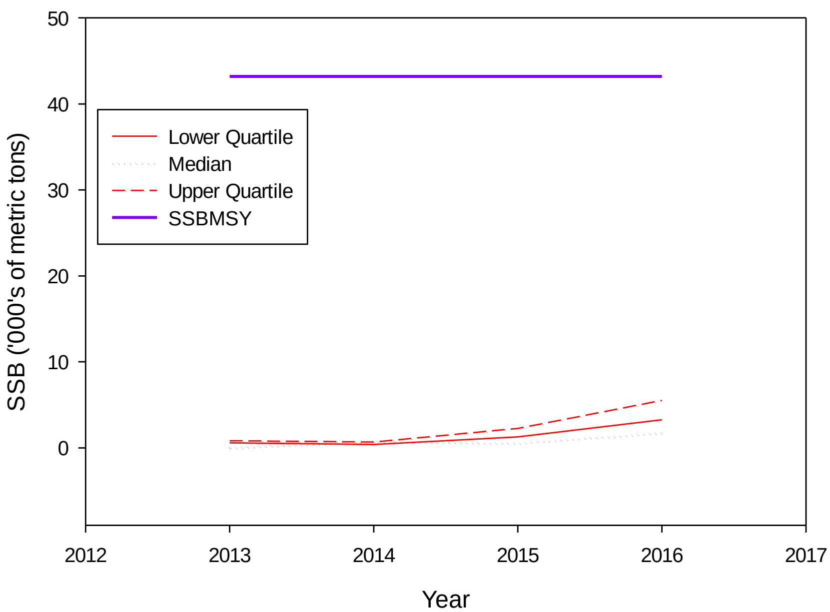


Figure 27 - Projected GB Yellowtail Flounder stock size under Option 2 (split series, rho adjusted, 500 mt)



Impacts on other species

In general, the specification of groundfish ABCs and ACLs by this option would not be expected to have direct impacts on most other species. Other species are caught on groundfish fishing trips and the ABCs/ACLs could indirectly affect species if they result in changes in groundfish fishing activity. When compared to Option 1/No Action, this option would be expected to result in more groundfish fishing effort and as a result catches of other species would be expected to be higher. This would be expected to result in higher fishing mortality rates for those species when compared to the No Action alternative. Species such as monkfish, skates, and spiny dogfish are among those most likely to be affected. All of these species are subject to management controls, and it is not likely that fishing mortality will exceed targets. Indeed, when compared to recent years, the reduction in groundfish ABCs/ACLs as proposed in this action would be expected to result in reduced catches of other species.

Additional species that could be affected by this option would be Atlantic sea scallops and species captured by small-mesh fisheries. The specified sub-ACLs of GB yellowtail flounder for the sea scallop fishery and small-mesh fisheries are designed to limit the incidental catch of yellowtail flounder by the scallop fishery and small-mesh fisheries. For the scallop fishery, allocations that are exceeded result in triggering AMs in subsequent years. AMs for small-mesh fisheries are being considered in this action. The sub-ACLs can affect fishing mortality and stock size of sea scallops and species captured by small-mesh fisheries through this mechanism.

Impacts of Sector Carry-Over on Biological Impacts

Framework 50 used 305(d) of MSA to clarify carryover, which remains unchanged; however, how NMFS accounts for carryover that is used in determining if accountability measures (AMs) are necessary will be handled differently beginning in FY 2014 and beyond (see Appendix V in the FW 50 Environmental Assessment for a more detailed explanation). Carryover does not apply to those stocks managed under the US/CA Understanding (i.e., Eastern Georges Bank cod, Eastern Georges Bank haddock, and Georges Bank yellowtail flounder).

Under the clarified carryover program, there are two components: A *de minimus* amount automatically provided that is not expected to cause any ACL overage and changes to catch accounting for sectors that bring forward and use more than the *de minimus* amount (up to the full 10% available).

NMFS is in the process of determining an appropriate *de minimus* amount for each stock and will provide the analysis to the Council at a later date. The *de minimus* amount is expected to be quite small so that it falls within the management uncertainty for the fishery and would not, if fully utilized, cause the sector sub-ACL to be exceeded. As such, it is expected to be consistent with National Standard 1 guidance.

Under the clarified program, sectors can continue to bring forward up to 10% of unused ACE from the previous fishing year. If this carryover is used in subsequent year (e.g., FY 2013 carryover used in FY 2014) there are two possible outcomes under the clarification:

- If the total fishery level ACL is not exceeded for the year, the carryover catch does not trigger accountability measures (AM). Essentially, sectors that use carryover ACE in this scenario benefit from underutilization of other components of the fishery and are not subject to an AM.
- If the total fishery level ACL is exceeded, the amount of carried over catch that contributed to the overage will be subject to the repayment AM specified in regulation. Under this scenario, the repayment may not equal the amount of carryover used, dependent on if other fishery components fully utilized available catch limits. Only in a situation where all fishery components used 100% of their sub-ACLs would sectors repay the full amount of carryover used. By ensuring

accountability for any stock-level overage, this carryover approach would be consistent with National Standard 1 guidance.

7.1.2 Commercial and Recreational Fishery Measures

7.1.2.1 Small-Mesh Fishery Accountability Measures

7.1.2.1.1 Option 1: No Action

Impacts on regulated groundfish

This measure would not adopt a small-mesh fishery accountability measure for GB yellowtail flounder. Catches by these fisheries have ranged from 24 mt to 110 mt during the period 2004 through 2012.Should the overall ACL decline in future years, this catch could be a substantial portion of overall removals, and the lack of an AM to prevent the sub-ACL from being exceeded could lead to overfishing. Currently, groundfish fishing activity would be impacted by any overage of the GB yellowtail flounder sub-ACL for this fishery. When compared to Option 2, this measure would not result in any changes in fishing effort. As a result, when compared to Option 2, this option would have an increased risk of overfishing GB yellowtail flounder.

Impacts on other species

This option would have direct biological impacts on other species. This option would be expected to lead to changes in catches of other species, and would affect the management of those species. Additional species that could be affected by this option would be species caught in small-mesh fisheries, principally squid and whiting and Atlantic sea scallops on Georges Bank. The GB yellowtail flounder sub-ACL for small-mesh fisheries does not have an AM. Although a pound for pound payback would remain in place due to the Understanding, fishing would continue on whiting and squid of Georges Bank if the sub-ACL was exceeded, zero, or not specified. The sub-ACL for GB yellowtail flounder can affect fishing mortality and stock size of species captured by the small-mesh fisheries.

The specified sub-ACL of GB yellowtail flounder for the sea scallop fishery are designed to limit the incidental catch of yellowtail flounder by the scallop fishery. For the scallop fishery, allocations that are exceeded result in triggering AMs in subsequent years. The sub-ACL for GB yellowtail flounder can affect fishing mortality and stock size of sea scallops and other species captured by scallop fishery.

7.1.2.1.2 Option 2: Accountability Measure for the Small-Mesh Fishery Georges Bank Yellowtail Flounder Sub-ACL

Two options (one with two sub-options) are being considered for the small-mesh fishery AM.

<u>Sub-Option A</u>:

Impacts on regulated groundfish

This sub-option would prohibit fishing with small-mesh gear if there was no sub-ACL (sub-ACL is zero or not specified) and in the Georges Bank yellowtail flounder stock area. This would reduce fishing in this area under the AM and would decrease impacts on GB yellowtail flounder. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on other regulated groundfish species. Option 2/Sub-Option A could have positive impacts on GB yellowtail flounder compared to Option 1, making it less likely that overfishing would occur.

Impacts on other species

This measure could reduce catches of species caught on small-mesh trips, primarily squid and whiting. This is because if the AM is triggered because the sub-ACL is exceeded, it may restrict fishing activity on GB and lead to reduced catches of squid and whiting. When compared to Option 1/No Action, there is a chance this measure would lead to reduced fishing mortality on small-mesh species.

<u>Sub-Option B1</u>:

Impacts on regulated groundfish

This AM would only be triggered if both the overall ACL and small-mesh sub-ACL of GB yellowtail flounder were exceeded; if only one was exceeded then no AM would be implemented and therefore no expected change in fishing pressure. If the AM was implemented then the small-mesh vessels would be required to use modified gear to reduce the catch of flounders in the AM areas. The gear restrictions under the AM would decrease impacts on GB yellowtail flounder. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on regulated groundfish species. Option 2/Sub-Option B1 could have positive impacts on GB yellowtail flounder compared to Option 1, but less positive benefits than Sub-Option A, making it less likely that overfishing would occur.

Impacts on other species

This measure could reduce catches of species caught on small-mesh trips, primarily squid and whiting. This is because if the AM is triggered because the sub-ACL is exceeded, it may reduce the target catch efficiency of the gear through use of the approved conservation gear and also perhaps fishing activity for those without approved gear on GB and lead to reduced catches of squid and whiting. When compared to Option 1/No Action, there is a chance this measure would lead to reduced fishing mortality on small-mesh species.

<u>Sub-Option B2</u>:

Impacts on regulated groundfish

The AM would be triggered if only the small-mesh sub-ACL for GB yellowtail flounder was exceeded. This option might be triggered sooner than the other options. If the AM was implemented then the small-mesh vessels would be required to use modified gear to reduce the catch of flounders in the AM areas. If the AM was implemented then the small-mesh vessels would be required to use modified gear to reduce the catch of flounders in the AM areas. The gear restrictions under the AM would decrease impacts on GB yellowtail flounder. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on regulated groundfish species. Option 2/Sub-Option B2 could have positive impacts on GB yellowtail flounder compared to Option 1, but less positive benefits than Sub-Option A, making it less likely that overfishing would occur. Compared to Sub-Option B1, Sub-Option B1 is more conservative.

Impacts on other species

This measure could reduce catches of species caught on small-mesh trips, primarily squid and whiting. This is because if the AM is triggered because the sub-ACL is exceeded, it may reduce the target catch efficiency of the gear through use of the approved conservation gear and also perhaps fishing activity for those without approved gear on GB and lead to reduced catches of squid and whiting. When compared to Option 1/No Action, there is a chance this measure would lead to reduced fishing mortality on small-mesh species.

7.1.2.2 Small-Mesh Fishery Measures

7.1.2.2.1 Option 1: No Action

Impacts on regulated groundfish species

This option would not establish any call-in requirements for the small-mesh fishery. This would not affect fishing activity and is therefore not expected to impact regulated groundfish species or other species. When compared to Option 2, this measure would also not result in any changes in fishing effort and would not be expected to have any differential impacts on regulated groundfish species.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.2.2.2 Option 2: Call-in Requirement for Small-Mesh Fisheries

Impacts on regulated groundfish species

Option 2 would require a call-in requirement for small-mesh fisheries. This is an administrative alternative and is not expected to impact regulated groundfish species or other species. Compared to the No Action alternative, this alternative would not impact regulated groundfish species or other species.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.2.3 Management Measures for US/CA TACs

This section considers changing fishery management measures as necessary to adjust catches of US/CA stocks. More than one option can be selected.

7.1.2.3.1 Option 1: No Action

Impacts on regulated groundfish species

This option would not alter US/CA quotas in-season; this option is not expected to impact regulated groundfish species. Compared to Options 2, 3, 4 and 5, the No Action alternative would impact regulated groundfish species the least.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.2.3.2 Option 2: Revised in-season adjustment for US/CA TACs

Impacts on regulated groundfish species

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks (EGB haddock, EGB cod, and GB yellowtail flounder). An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on the US/CA stocks and stocks caught at the same time such as other regulated groundfish species. Option 2 has similar impacts on regulated groundfish species compared to Options 3 and 4. When compared to the No Action alternative, it could have increased potential impacts on groundfish species.

Impacts on other species

This option would potentially lead to changes in catches of other species caught with US/CA stocks. When compared to the No Action alternative, it could have increased potential impacts on other species.

7.1.2.3.3 Option 3: Revised in-season adjustment for US/CA TACs

Impacts on regulated groundfish species

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks (EGB haddock, EGB cod, and GB yellowtail flounder). An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on the US/CA stocks and stocks caught at the same time such as other regulated groundfish species. Option 3 has similar impacts on regulated groundfish species compared to Options 2 and 4. When compared to the No Action alternative, it could have increased potential impacts on groundfish species.

Impacts on other species

This option would potentially lead to changes in catches of other species caught with US/CA stocks. When compared to the No Action alternative, it could have increased potential impacts on other species.

7.1.2.3.4 Option 4: Revised in-season adjustment for US/CA TACs

Impacts on regulated groundfish species

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks (EGB haddock, EGB cod, and GB yellowtail flounder). An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on the US/CA stocks and stocks caught at the same time such as other regulated groundfish species. Option 4 has similar impacts on regulated groundfish species compared to Options 2 and 3. When compared to the No Action alternative, it could have increased potential impacts on groundfish species.

Impacts on other species

This option would potentially lead to changes in catches of other species caught with US/CA stocks. When compared to the No Action alternative, it could have increased potential impacts on other species.

7.1.2.3.5 Option 5: Distribution of US TACs in Eastern/Western Georges Bank

<u>Sub-Option A</u>:

Impacts on regulated groundfish

This option would allow an adjustment to the EGB haddock quota prior to the start of the fishing year; the expected adjustment would be to reduce the EGB haddock quota and increase the WGB haddock quota. This alternative could increase fishing effort in the western area and increase impacts on WGB haddock but could result in a decrease in impacts of EGB haddock in the eastern area. Likewise, other groundfish species, caught on the same trips (e.g., Georges Bank cod) could have increased fishing effort. Option 5 has similar impacts on regulated groundfish species compared to Options 2, 3 and 4. When compared to the No Action alternative, it could have increased potential impacts on Georges Bank haddock.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

<u>Sub-Option B</u>:

Impacts on regulated groundfish

This option allows sectors or state-operated permit banks, to harvest their EGB haddock quota in the WGB stock area at any time during the fishing year. It is unknown how much EGB quota will be harvested in the WGB area or whether this sub-option would result in more EGB quota being move than sub-option A. This alternative could increase fishing effort in the western area and increase impacts on WGB haddock but could result in a decrease in impacts of EGB haddock in the eastern area. Likewise, other groundfish species, caught on the same trips (e.g., Georges Bank cod) could have increased fishing effort. Option 5 has similar impacts on protected species compared to Options 2, 3 and 4. When compared to the No Action alternative, it could have increased potential impacts on Georges Bank haddock.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.2.4 Georges Bank Yellowtail Flounder Management Measures

7.1.2.4.1 Option 1: No Action

Impacts on regulated groundfish

This option would not modify the management measures for GB yellowtail flounder for estimating discards. This option would continue to use the entire stock area as the discard stratification scheme used for quota monitoring purposes. This level of area stratification is consistent with that used when assessing this stock, and so presumably it would result in a closer correspondence between in-season discard estimates and the discard estimates used in assessments regardless of how observer coverage is distributed in the area. If there are different discard rates in different areas, however, this approach may lead to increased uncertainty in discard estimates. The analyses summarized in Table 51and Table 52 show that based on FY 2010 and FY 2011 data, the discard estimates from this option would not be expected to be very different than in Option 2. As discussed, however, the variance may increase.

Impacts on other species
There are not likely to be direct impacts on fishing mortality or stock size of other species as a result of the discard strata used if this option is adopted. The selection of discard strata used to monitor GB yellowtail flounder quotas will not modify the discard strata used to estimate discards of other species. There would not likely be differences between this option and Option 2.

7.1.2.4.2 Option 2: Revised Discard Strata for GB Yellowtail Flounder

Impacts on regulated groundfish

This measure would modify the way discards are estimated for GB yellowtail flounder. Under Option 1 No Action, each discard stratum applies to the entire GB yellowtail flounder stock area. Discards of GB yellowtail flounder are calculated based on observed and unobserved trips in SAs 522, 525, 561, and 562. This option would divide this area into two separate discard strata: one stratum would be SA 522, and SAs 525/561/562 would be the other stratum.

In a qualitative sense, if there are differences in discard rates between the two strata, and observer coverage is adequate to sample trips from both strata, then stratification should provide more precise estimates of discards. Whether a different point estimate would result from the two stratification schemes depends in part on whether observer coverage with one stratum is distributed in a way that accurately represents fishing activity. If it does not, then stratification into two areas could result in a point estimate that is different from the single stratum approach. Recent assessments of GB yellowtail flounder use only one stratum, so it is possible that if quota monitoring uses a different stratification system the catch estimates for quota monitoring could differ from those used for assessing the stock. If the differences are large, then it will make it more difficult to link quota monitoring catches to mortality targets. If the quota-monitored catch is smaller than the assessment catch mortality targets may be exceeded. If the quota-monitored catch is larger than the assessment catch available yield may be foregone. The differences between the two catch estimates should only apply to discard estimates and not to landings. Large mesh otter trawl discards of GB yellowtail flounder declined dramatically after the implementation of sectors. In 2011, they accounted for less than five percent of the total catch. Assuming these discards remain a small proportion of the total catch, differences in discard estimates between the two stratification approaches are not likely large enough to threaten mortality targets.

Data from fishing years 2010 and 2011 was used to explore how the two proposed discard strata might affect discard estimates used in monitoring sector catches. To simplify the analyses, discards were calculated using the approach used for in-season rates; none of the estimates used the assumed rate or transition rate approach that is used until five trips are observed in a stratum. Since almost all GB yellowtail flounder is caught by trawl gear, only trips using otter trawls (code 050), separator trawls (code 057), or Ruhle trawls (code 054) were used. There are several instances where there were no observed trips in a sector/gear combination and there were unobserved trips, or the opposite; these instances were not included in the analysis. The analyses summarized observed trips and discard rates by sector and gear, and then expanded the discard rates to total discards on unobserved trips by using the total kept catch on unobserved trips. Discards on observed trips were added to get total discards in each gear and sector combination.

The results for FY 2010 are shown in Table 51 and for FY 2011 in Table 52. Generally, for both years the sector/gear discard rate in SA 525/561/562 was higher than the discard rate in SA 522, though there are a few exceptions. The discard rate in SA 525/561/562 was higher than the discard rate for all four areas in all but three instances, and in each of these three instances there were small numbers of trips. Stratification resulted in relatively small changes in the point estimate of discards. In FY 2010, the total discards estimated for these trips was five percent higher when the Option 2 approach was used, while in FY 2011 the difference was less than one percent. The effect on the variance of the discard estimates was not calculated, but it should be noted that for several sectors stratification into two areas reduces the number of observed trips to low levels which would be expected to increase the variance in those estimates. Lower observer coverage levels and an additional area stratification could result in some sector/gear/area combinations with very high or low discard rates just from chance alone. Estimates based on a finer scale of stratification will be more sensitive to errors in the expansion factor (the unobserved kept–all estimate). Many VTR records attribute all landings to one statistical area even when multiple areas were fished; this could lead to more errors in the kept-all that is used to expand discard rates to an estimate of discards if a discard stratum is small or based on one statistical area.

In summary, based on fishing activity in FY 2010 and FY 2011, changing the stratification of quota-monitoring discard estimates as proposed in this option is not likely to lead to large changes in the point estimate of discards when compared to the stratification method used in Option 1 No Action. As a result this option would be unlikely to result in biological impacts that are any different than those in Option 1 No Action. It is possible that Option 2 may result in increased variance in discard estimates as some sector/gear combinations could have few observed trips in each stratum. Based on FY 2010 and 2011, this appears likely since a number of sector/gear /area combination has fewer than five observed trips. It is also possible that if observer coverage rates decline, the variance of discard estimates could increase because more sector/gear/area combinations will have fewer trips. This option cannot be compared to Option 3 because the two measures address different issues.

Impacts on other species

This option would not have any biological impacts on other species. The proposed change to the discard strata would only be used for catches of GB yellowtail flounder and not for other species. As a result, this measure would not change the way discards of other species are calculated. The biological impacts on other species would not be any different than those expected under Option 1 No Action.

Table 51- Observed trips and expanded discards using different GB yellowtail flounder stratification schemes, FY 2010. "Other" bold-faced discard rates are higher than those in SA 522; underlined values are higher than the rates for the entire area.

2010		Observed Trips						Expanded Discards			
		GB Area		522		Other					
Sector ID	Gear	SubTrips	d:K	SubTrips	d:K	SubTrips	d:K	GB	522	Other	(522+Other)
002	050	4	0.084631	2	0.003465	2	***0.098145***	27,498	202	26,077	26,279
005	050	66	0.001679	43	0.001237	23	***0.00212***	5,993	1,877	4,354	6,231
	054	8	0.000605	2	0.000747	6	0.0006	163	39	131	170
	057	68	0.002507	25	0.00243	43	***0.00252***	10,537	1,107	9,441	10,548
007	050	55	0.003898	34	0.001783	21	***0.007747***	9,342	2,477	7,656	10,133
	054	2	0.000974	1	0	1	***0.000988***	9	0	9	9
	057	17	0.004366	7	0.000872	10	***0.006337***	1,298	65	1,397	1,463
009	050	46	0.005128	21	0.002396	25	***0.007148***	14,829	3,283	10,705	13,988
	054	3	0.000128	2	0	1	***0.000129***	1	0	1	1
	057	15	0.021771	7	0.011251	8	***0.031677***	4,469	640	4,786	5,426
012	050	35	0.002082	20	0.001795	15	***0.002374***	3,729	1,155	2,721	3,876
	057	26	0.006762	11	0.001599	15	***0.007824***	6,087	209	6,113	6,322
016	050	51	0.004653	26	0.002122	25	***0.006177***	12,727	1,947	11,190	13,137
	054	25	0.001602	11	0.000452	14	***0.002505***	811	79	893	972
	057	8	0.011684	3	0.000752	5	***0.012846***	1,157	7	1,150	1,157
017	050	95	0.010453	53	0.00295	42	***0.018264***	58,564	7,049	58,322	65,371
	054	1	0.001237			1	***0.001237***	55	0	55	55
	057	16	0.009919	7	0.000195	9	***0.01137***	1,568	4	1,609	1,613
018	050	17	0.008556	7	0.004379	10	***0.009906***	8,004	882	7,270	8,152
019	050	11	0.008052	4	0.000822	7	***0.009357***	4,866	91	4,618	4,708
020	050	3	0.00039	2	0.000391	1	0	98	66	0	66
	057	4	0.017352	1	0.023438	3	0.017299	2,047	12	2,029	2,042
								173,855	21,189	160,530	181,719

Table 52- Observed trips and expanded discards using different GB yellowtail flounder stratification schemes, FY 2011. "Other" bold-faced discard rates are higher than those in SA 522; underlined values are higher than the rates for the entire area.

		Observed Trips						Expanded Discards			
		GB Area		522		Other					
Sector	Gear	Sub Trips	d:K	Sub Trips	d:K	SubTrips	d:K	GB	522	Other	(522+Other)
005	050	100	0.000878	66	0.000918	34	0.000816	3,658	2,018	1,604	3,622
	054	2	0			2	0	0	0	0	0
	057	55	0.002542	20	0.000408	35	***0.003048***	5,827	101	6,311	6,411
007	050	45	0.003	28	0.001599	17	***0.006827***	5,946	2,223	3,978	6,201
	057	6	0.003444	2	0	4	***0.003711***	3,135	0	3,148	3,148
009	050	48	0.007793	26	0.002939	22	***0.012107***	18,034	3,634	12,867	16,501
	057	10	0.001279	5	0.00107	5	***0.001364***	140	29	111	140
012	050	40	0.002714	26	0.000415	14	***0.006013***	3,832	293	4,427	4,720
	057	12	0.00154	6	0	6	***0.001962***	355	0	308	308
								0	0	0	0
016	050	68	0.004404	34	0.000974	34	***0.008926***	12,448	1,423	12,024	13,446
								0	0	0	0
	054	10	0.000401	1	0	9	***0.000409***	81	0	81	81
017	050	160	0.006421	90	0.003126	70	***0.009634***	49,351	12,336	35,642	47,978
	057	10	0.002581	5	0	5	***0.003888***	678	0	712	712
018	050	6	0.005114	3	0.002983	3	***0.006598***	1,628	346	1,367	1,713
019	050	5	0.002488	2	0.001469	3	***0.003045***	1,086	84	1,148	1,232
020	050	5	0.000683	3	0	2	***0.002038***	248	0	138	138
								106,446	22,486	83,865	106,352

7.1.2.5 Prohibition on Possession of Yellowtail Flounder by the Limited Access Scallop Fishery

7.1.2.5.1 Option 1: No Action

Impacts on regulated groundfish

This option would maintain the requirement for limited access scallop vessels to land all legal-sized yellowtail flounder. The No Action alternative is not expected to change fishing activities by scallop vessels and would not impact GB and SNEMA yellowtail flounder species. In addition due to concerns about discarding of yellowtail flounder, this option would maintain accountability for catches of this stock. However if vessel choose to take advantage of this regulation and target yellowtail flounder then when compared to Option 2 yellowtail flounder catches could increase. Option 1 would have less impact on GB and SNEMA yellowtail flounder than Option 2.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

7.1.2.5.2 Option 2: Prohibition on possession of yellowtail flounder

Impacts on regulated groundfish

This option would prohibit possession of GB and SNEMA yellowtail flounder stocks by limited access scallop vessels, i.e. they would be required to discard all yellowtail flounder. Effort control in the scallop fishery is based on DAS and this measure may not result in a large increase in fishing effort. Depending on the scallop sub-ACL for yellowtail flounder, this measure has the potential to increase effort by limited access scallop vessels. This could have increased impacts on GB yellowtail flounder. Option 2 would have more impact on GB and SNEMA yellowtail flounder than Option 1.

Impacts on other species

This option would not be expected to have any direct impacts on other species. This option would not be expected to lead to any changes in catches of other species, and would not affect the management of those species.

Additional information to be provided in a separate document from the Scallop PDT.

7.2 Essential Fish Habitat Impacts

To be provided in a separate document.

7.3 Impacts on Endangered and Other Protected Species

7.3.1 Updates to Status Determination Criteria, Formal Rebuilding Programs, and Annual Catch Limits

7.3.1.1 Revised Gulf of Maine Cod Rebuilding Strategy

7.3.1.1.1 Option 1: No Action

This option would result in no revision to the rebuilding strategy for Gulf of Maine cod. Fishing mortality (set at 75% F_{MSY}) would be maintained. The stock is unlikely to rebuild by 2014; this option does not alter fishing mortality and is not expected to greatly impact protected species. Compared to Options 2 and 3, this option would have low impacts on protected species.

7.3.1.1.2 Option 2: Revised Rebuilding Strategy for Gulf of Maine Cod

This option contains two sub-options that would allow the stock to rebuild by 2022 or 2024. The two sub-options allow for an increase in catch, which may increase interactions with protected resources when compared to the No Action alternative.

Sub-Option A: This strategy would rebuild the stock in 8 years with a 50% probability of success. The 8 year scenario is very similar to that of 75% F_{MSY}. The 8 year rebuilding plan is expected to allow a small increase in catch, which may impact protected species in areas where fishing for Gulf of Maine cod occurs. Compared to the No Action alternative and Option 3, this alternative is expected to adversely affect, but not jeopardize protected species in areas where fishing for Gulf of Maine cod occurs because of the slight increase in F allowed. The difference in F between Sub-Options A and B is small and may be difficult to detect; Sub-Option A would have similar impacts on protected resources as Sub-Option B during the length of the rebuilding plan.

Sub-Option B: This strategy would rebuild the stock in 10 years with a 50% probability of success. The resulting F for the 10 year scenario is higher than that of 75%F_{MSY} based on projections. The 10 year rebuilding plan is expected to allow an increase in catch, which may impact protected species in areas where fishing for Gulf of Maine cod occurs. Compared to the No Action alternative and Option 3, this alternative is expected to adversely affect, but not jeopardize protected species in areas where fishing for Gulf of Maine cod occurs because of the slight increase in F allowed. The difference in F between Sub-Options A and B is small and may be difficult to detect; Sub-Option B would have similar impacts on protected resources as Sub-Option A during the length of the rebuilding plan.

7.3.1.1.3 Option 3: Rebuilding Plan Review Analysis

Option 3 would require an analysis of the rebuilding plan using the described criteria. This is an administrative alternative and is not expected to impact protected species. Compared to the No Action alternative and Option 2, this alternative would not impact protected species.

7.3.1.2 Revised American Plaice Rebuilding Strategy

7.3.1.2.1 Option 1: No Action

This option would result in no revision to the rebuilding strategy for American plaice. Fishing mortality (set at 75% F_{MSY}) would be maintained. The stock is unlikely to rebuild by 2014, however, this option does not alter fishing mortality and is not expected to greatly impact protected species. Compared to Options 2 and 3, this option would have low impacts on protected species.

7.3.1.2.2 Option 2: Revised Rebuilding Strategy for American Plaice

This option contains three sub-options that would allow the stock to rebuild by 2021, 2022 or 2024. The three sub-options allow for an increase in catch, which may increase interactions with protected resources when compared to the No Action alternative.

<u>Sub-Option A</u>: This strategy would rebuild the stock in 7 years with a 50% probability of success. The resulting F for the 7 year scenario is higher than that of 75%F_{MSY} based on projections. This is expected to allow a small increase in catch, which may impact protected species in areas where fishing for American plaice occurs. Compared to the No Action alternative and Option 3, this alternative is expected to adversely affect, but not jeopardize protected species in areas where fishing for American plaice occurs because of the slight increase in F allowed. The difference in F between Sub-Options A, B and C is small and may be difficult to detect; Sub-Option A would have similar impacts on protected resources as Sub-Options B and C during the length of the rebuilding plan.

<u>Sub-Option B</u>: This strategy would rebuild the stock in 8 years with a 50% probability of success. The resulting F for the 8 year scenario is higher than that of 75%F_{MSY} based on projections. This is expected to allow a small increase in catch, which may impact protected species in areas where fishing for American plaice occurs. Compared to the No Action alternative and Option 3, this alternative is expected to adversely affect, but not jeopardize protected species in areas where fishing for American plaice occurs because of the slight increase in F allowed. The difference in F between Sub-Options A, B and C is small and may be difficult to detect; Sub-Option B would have similar impacts on protected resources as Sub-Options A and C during the length of the rebuilding plan.

<u>Sub-Option C</u>: This strategy would rebuild the stock in 10 years with a 50% probability of success. The resulting F for the 10 year scenario is higher than that of 75%F_{MSY} based on projections. This is expected to allow a small increase in catch, which may impact protected species in areas where fishing for American plaice occurs. Compared to the No Action alternative and Option 3, this alternative is expected to adversely affect, but not jeopardize protected species in areas where fishing for American plaice occurs because of the slight increase in F allowed. The difference in F between Sub-Options A, B and C is small and may be difficult to detect; Sub-Option C would have similar impacts on protected resources as Sub-Options A and B during the length of the rebuilding plan.

7.3.1.2.3 Option 3: Rebuilding Plan Review Analysis

Option 3 would require an analysis of the rebuilding plan using the described criteria. This is an administrative alternative and is not expected to impact protected species. Compared to the No Action alternative and Option 2, this alternative would not impact protected species.

7.3.1.3 Annual Catch Limits

7.3.1.3.1 Option 1: No Action

For white hake and the US/CA stocks, there would be no groundfish sub-ACL under this option. This would reduce interactions with protected species as fishing activity would be expected to decrease in areas where these species are caught. Option 1 may have more positive impacts on protected species than Option 2.

7.3.1.3.2 Option 2: Revised Annual Catch Limit Specifications

This option proposes to adopt new specifications and ACLs for FY 2014 -2015 for GB cod, GB haddock, GB yellowtail flounder, and white hake. This measure includes the identification of ACLs, OFLs, and ABCs as required by the M-S Act and as implemented by Amendment 16. It also incorporates adoption of the incidental catch TACs for the special management programs that use Category B DAS. Implementation of ACLs is required by the Magnuson-Stevens Act and may have protected species impacts that are difficult to define. The protected species impacts of ACL-setting in general are discussed in detail in Amendment 16.

As was mentioned in the analysis of the previous options, the greater the fishing effort, the more possibility that interactions with protected species may occur. For the US/Canada stocks, the U.S. TAC for GB cod, GB haddock and GB yellowtail flounder all increase. This could lead to a shift in effort to the eastern area for GB cod and haddock. The quantitative consequences of these changes are unknown, but could be positive if effort is reduced in seasonal high use areas and the reduction overlaps with the distribution of protected resources.

Option 2 would increase the white hake ABC. The increased amount is not expected to cause large changes to fishing behavior and is also not expected to increase impacts on protected species. The combination of the changes in ABCs may result in some shifts in fishing area but the overall impact is not expected to be great. The No Action alternative would be expected to have a lower impact on protected species, as it would result in reduced fishing activity. Option 2 would have more negative impacts on protected species than Option 1.

It is important to note that all of the options which could cause increases or decreases in interactions with the fishery the overall impact to protected species are likely to be negligible, and the impacts are uncertain as quantitative analysis has not been performed. Catches in the fishery will still be constrained by other limitations placed on the fishery, such as those relating to the catch of other co-managed species and bycatch, thereby mitigating the impacts of the potential changes.

7.3.2 Commercial and Recreational Fishery Measures

7.3.2.1 Small-Mesh Fishery Accountability Measures

7.3.2.1.1 Option 1: No Action

If this option is adopted, an accountability measure for the small-mesh fishery would not be established. Fishing activity would not be impacted by any overage of the GB yellowtail flounder sub-ACL for this fishery, which would not alter the expected level of interactions with protected species. When compared to Option 2, this measure would not result in any changes in fishing effort and would not be expected to have any differential impacts on protected species.

7.3.2.1.2 Option 2: Accountability Measure for the Small-Mesh Fishery Georges Bank Yellowtail Flounder sub-ACL

This option would establish an accountability measure that would impact fishing activity if the Georges Bank yellowtail flounder sub-ACL was exceeded by the small-mesh fishery. This option may provide an incentive to decrease yellowtail flounder bycatch, e.g. by using modified gear, however, a reduction in yellowtail bycatch may not reduce interactions with protected resources unless the modified gear is shown to decrease interactions with protected resources or fishing effort is reduced.

Sub-Option A: This sub-option would prohibit fishing with small-mesh gear, if there was no sub-ACL for the Georges Bank yellowtail flounder stock area. This would reduce fishing in this area under the AM and would decrease impacts on protected resources. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on protected species. Option 2 could have positive impacts on protected species compared to Option 1.

Sub-Option B1: This AM would only be triggered if both the overall ACL and small-mesh sub-ACL of GB yellowtail flounder were exceeded; if only one was exceeded then no AM would be implemented and therefore no expected change in fishing pressure. If the AM was implemented, then the small-mesh vessels would be required to use modified gear to reduce the catch of flounders in the AM areas. The gear restrictions under the AM would decrease impacts on protected species. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on protected species. Option 2 could have positive impacts on protected species compared to Option 1.

Sub-Option B2: The AM would be triggered if only the small-mesh sub-ACL for GB yellowtail flounder was exceeded. This option might be triggered sooner than the other options. If the AM was implemented then the small-mesh vessels would be required to use modified gear to reduce the catch of flounders in the AM areas. The gear restrictions under the AM would decrease impacts on protected species. Any unforeseen shift in fishing effort to areas outside the AM areas may increase fishing activity and impacts on protected species. Option 2 could have positive impacts on protected species compared to Option 1

7.3.2.2 Small-Mesh Fishery Measures

7.3.2.2.1 Option 1: No Action

This option would not establish any call-in requirements for the small-mesh fishery. This would not affect fishing activity and is therefore not expected to impact protected resources. When compared to Option 2, this measure would also not result in any changes in fishing effort and would not be expected to have any differential impacts on protected species.

7.3.2.2.2 Option 2: Call-In Requirement for Small-Mesh Fisheries

Option 2 would require a call-in requirement for the small-mesh fishery but would not alter the level of observer coverage in this fishery. This is an administrative alternative and is not expected to impact protected species. Compared to the No Action alternative, this alternative would not impact protected species.

7.3.2.3 Management Measures for US/CA TACs

7.3.2.3.1 Option 1: No Action

This option would not alter US/CA quotas in-season; this option is not expected to impact protected species. Compared to Options 2, 3, 4 and 5, the No Action alternative would impact protected species the least.

7.3.2.3.2 Option 2: Revised In-Season Adjustment for US/CA TACs

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks. An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on protected species. Option 2 has similar impacts on protected species compared to Options 3, 4 and 5. When compared to the No Action alternative, it could have increased potential impacts on protected species.

7.3.2.3.3 Option 3: Revised In-Season Adjustment for US/CA TACs

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks. An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on protected species. Option 3 has similar impacts on protected species compared to Options 2, 4 and 5. The differences between Options 2, 3 and 4 pertain to how the change in quota is implemented, which is not expected to impact protected species on its own. When compared to the No Action alternative, it could have increased potential impacts on protected species.

7.3.2.3.4 Option 4: Revised In-Season Adjustment for US/CA TACs

This option allows the Regional Administrator to adjust the US/CA quotas during the fishing year that could result in an increase or decrease in the TACs for the US/CA stocks. An in-season adjustment could shift (or increase) fishing effort from one target species to another and from one area to another, potentially increasing impacts on protected species. Option 4 has similar impacts on protected species compared to Options 2, 3 and 5. The differences between Options 2, 3 and 4 pertain to how the change in quota is implemented, which is not expected to impact protected species on its own. When compared to the No Action alternative, it could have increased potential impacts on protected species.

7.3.2.3.5 Option 5: Distribution of US TACs for Eastern/Western Georges Bank Haddock

Sub-Option A: This option would allow an adjustment to the EGB haddock quota prior to the start of the fishing year; the expected adjustment would be to reduce the EGB haddock quota and increase the WGB haddock quota. This alternative could increase fishing effort in the western area and increase impacts on protected species but could result in a decrease in impacts on protected species in the eastern area. Option 5 has similar impacts on protected species compared to Options 2, 3 and 4. When compared to the No Action alternative, it could have increased potential impacts on protected species.

Sub-Option B: This option allows sectors or state-operated permit banks, to harvest their EGB haddock quota in the WGB stock area at any time during the fishing year. It is unknown how much EGB quota will be harvested in the WGB area or whether this sub-option would result in more EGB quota being move than sub-option A. This alternative could increase fishing effort in the western area and increase impacts on protected species but could result in a decrease in impacts on protected species in the eastern area. Option 5 has similar impacts on protected species compared to Options 2, 3 and 4. When compared to the No Action alternative, it could have increased potential impacts on protected species.

7.3.2.4 GB Yellowtail Founder Management Measures

7.3.2.4.1 Option 1: No Action

This option would not alter existing measures for GB yellowtail flounder and is not expected to impact protected species. Compared to Options 2 and 3, this option would have low impacts on protected species.

7.3.2.4.2 Option 2: Revised Discard Strata for GB Yellowtail Flounder

This option alters the stratification used for estimating discards of GB yellowtail flounder for in-season quota monitoring. If adopted this measure would allow fishing to continue in statistical area (SA) 522, an area that has been identified as having low abundance of yellowtail flounder, when the allocation is almost reached. This measure may increase interactions with protected species in this statistical area if a large amount of fishing effort shifts to the SA once the allocation is almost reached. Protected species in the remaining GB yellowtail flounder statistical areas may benefit from reduced impacts if fishing does shift from these areas. This option could have similar impacts on protected species as Option 3 but potentially more than Option 1.

7.3.2.5 Prohibition on Possession of Yellowtail Flounder by the Limited Access Scallop Fishery

7.3.2.5.1 Option 1: No Action

This option would maintain the requirement for limited access scallop vessels to land all legal-sized yellowtail flounder. The No Action alternative is not expected to change fishing activities by scallop vessels and would not impact protected species. Option 1 would have less impact on protected species than Option 2.

7.3.2.5.2 Option 2: Prohibition on Possession of Yellowtail Flounder

This option would prohibit possession of GB and SNEMA yellowtail flounder stocks by limited access scallop vessels, i.e. they would be required to discard all yellowtail flounder. Effort control in the scallop fishery is based on DAS and this measure may not result in a large increase in fishing effort. Depending on the magnitude of the scallop sub-ACL for yellowtail flounder, this measure has the potential to increase effort by limited access scallop vessels if limited access vessels are not restricted by a potentially low sub-ACL. This could have increased impacts on protected species but is not thought to jeopardize protected species. Option 2 would have more impact on protected species than Option 1.

7.4 Economic Impacts

To be provided in a separate document.

7.5 Social Impacts

7.5.1 Updates to Status Determination Criteria, Formal Rebuilding Programs and Annual Catch Limits

7.5.1.1 Gulf of Maine cod Rebuilding Strategy

7.5.1.1.1 Option 1: No Action

Option 1, the No Action alternative, would retain the target rebuilding end date of 2014. Given the current status of the stock, it is unlikely that GOM cod will be rebuilt by 2014. Thus, the fishing mortality for GOM cod would be reduced to as close to zero as possible until the stock is rebuilt.

If Option 1 is selected, many of the management options that might allow limited harvesting would be precluded, in favor of the measure most likely to offer the quickest rebuilding of the stock. Because Option 1 would dictate the necessary management measures to speed the rebuilding of the GOM cod stock, it could have a negative impact on the *Attitudes, Beliefs and Values* of the fishermen regarding management. To many vessel owners and operators in the Northeast groundfish fishery, the rules that limit fishing are considered inflexible and based on poorly understood science (Acheson & Gardner, 2011). Option 1 could perpetuate this negative view of management and government when it comes to the flexibility of rebuilding targets. Option 1 could also have negative impacts on the *Size and Demographic Characteristics* of the fishery as well as the *Historical Dependence on and Participation* in the fishery, since GOM cod would be effectively reduced to a bycatch-only fishery, and there would no longer be participants in the directed fishery. Option 1 could particularly impact communities that rely on GOM cod. Table 29 demonstrates that landings of GOM cod are important to primary and secondary ports throughout the Northeast US. If Option 1 leads to successful rebuilding of the GOM cod stock, then there could be long-term positive impacts, unless markets, processing capability, and other infrastructure that are lost during the period of low catch are unable to recover when the stocks rebuild.

7.5.1.1.2 Option 2: Revised Rebuilding Strategy for Gulf of Maine Cod

Two options are being considered for a revised rebuilding strategy for GOM cod, but neither would change the FY 2014-2015 ABC (1,550 mt). Compared to the No Action alternative, Option 2 is likely to have positive social impacts. The differential impacts of Option 2, Sub-Option A and B are difficult to determine and will depend upon whether or not the rebuilding target under each scenario is successfully met. Sub-Option B may have the most positive short-term impacts due to its higher fishing mortality rate. However, Sub-Option A may have more long-term positive impacts as it could lead to quicker rebuilding of the fishery to sustainable levels.

<u>Sub-Option A</u>: Option 2, Sub-Option A would revise the target rebuilding date for GOM cod, with a median probability of success, to 2022. Fishing mortality would be above 75% F_{MSY}.

If Option 2, Sub-Option A is selected, it would likely have short-term positive social impacts relative to No Action, as it would allow a higher level of fishing effort to be directed on GOM cod. This alternative could have a small positive impact on the overall *Size and Demographic Characteristics* of the fishery-related workforce, if it allows for higher harvest of GOM cod. Long-term social impacts could be positive if this alternative successfully rebuilds the GOM cod fishery. There may also be a small positive impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management because Option 2, Sub-Option A would not require the most rapid stock rebuilding measures.

Sub-Option B: Option 2, Sub-Option B would revise the target rebuilding date for GOM cod, with a median probability of success, to 2024. Fishing mortality would be above 75% F_{MSY}.

If Option 2, Sub-Option B is selected, it would likely have short-term positive social impacts, relative to No Action, as it would allow a higher level of fishing effort to be directed on GOM cod. This option could have a small positive impact on the overall *Size and Demographic Characteristics* of the fishery-related workforce, if it allows for higher harvest of GOM cod in the near-term. Long-term social impacts could be positive if the GOM cod fishery is rebuilt. There may also be a small positive impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management because Option 2, Sub-Option B would not require the most rapid stock rebuilding measures.

7.5.1.1.3 Option 3: Rebuilding Plan Review Analysis for Gulf of Maine Cod

This option must be selected in conjunction with an above option under Option 2.

Sub-Option A: Option 3, Sub-Option A would maintain the current biennial review process.

If this Option is adopted, it could have a negative impact to the *Attitudes, Beliefs and Values* of stakeholders who believe, when rebuilding has not occurred, additional investigation as to why is warranted. However, there could be positive impacts related to maintaining the status quo, as it would continue consistent review processes across fisheries.

Sub-Option B: Option 3, Sub-Option B (under specific conditions), would establish a rebuilding plan review analysis for GOM cod for use during the new rebuilding period.

If this Option is adopted, it could have a positive impact to the *Attitudes, Beliefs and Values* of stakeholders towards management, because it would assure that the most current information is used in decision making and it could lead to more flexible and responsive management. This benefit could be offset due to the fact that this new rebuilding plan review process would only apply to the GOM cod fishery. If this review process proves beneficial, stakeholders may feel that the process should be applied for all stocks in the fishery.

7.5.1.2 American Plaice Rebuilding Strategy

7.5.1.2.1 Option 1: No Action

Option 1, the No Action alternative, would retain the target rebuilding end date of 2014. Given the current status of the stock, it is unlikely that American plaice will be rebuilt by 2014. Thus, the fishing mortality for American plaice would be reduced to as close to zero as possible until the stock is rebuilt

If Option 1 is selected, many of the management options that might allow limited harvesting would be precluded, in favor of the measure most likely to offer the quickest rebuilding of the stock. Because Option 1 would dictate the necessary management measures to speed the rebuilding of the American plaice stock, it could have a negative impact on the *Attitudes, Beliefs and Values* of the fishermen regarding management. To many vessel owners and operators in the Northeast groundfish fishery, the rules that limit fishing are considered inflexible and based on poorly understood science (Acheson & Gardner, 2011). Option 1 could perpetuate this negative view of management and government when it comes to the flexibility of rebuilding targets. Option 1 would also have negative impacts on the *Size and Demographic Characteristics* of the fishery as well as the *Historical Dependence on and Participation* in the fishery, as American plaice would be effectively reduced to a bycatch-only fishery. Option 1 could particularly impact communities that rely upon American plaice. Table 29 demonstrates that landings of American plaice are important to primary and secondary ports throughout the Northeast US. If this option leads to successful rebuilding of the American plaice stock, then there could be long-term positive impacts, unless markets, processing capability, and other infrastructure that are lost during the period of low catch are unable to recover when the stocks rebuild.

7.5.1.2.2 Option 2: Revised Rebuilding Strategy for American Plaice

Three options are being considered for a revised rebuilding strategy for American plaice. Compared to the No Action alternative, Option 2 is likely to have positive social impacts. The differential impacts of Option 2, Sub-Option A, B and C are difficult to determine and will depend upon whether or not the rebuilding targets are successfully met. Sub-Option C may have the most positive short-term impacts due to higher fishing effort, however Sub-Option A may have more long-term positive impacts as it could lead to quicker rebuilding of the fishery to sustainable levels.

Sub-Option A: Option 2, Sub-Option A would revise the target rebuilding date for American plaice, with a median probability of success, to 2021. Fishing mortality would be above 75% F_{MSY}.

If Option 2, Sub-Option A is selected, it would likely have short-term positive social impacts, as it would allow a higher level of fishing effort to be directed on American plaice. This option could have a small positive impact on the overall *Size and Demographic Characteristics* of the fishery-related workforce, if it allows for higher harvest of American plaice. Long-term social impacts could be positive if this alternative successfully rebuilds the American plaice fishery. There may also be a small positive social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because Option 2, Sub-Option A would require less rapid stock rebuilding measures relative to No Action.

Sub-Option B: Option 2, Sub-Option B would revise the target rebuilding date for American plaice, with a median probability of success, to 2022. Fishing mortality would be above 75% F_{MSY}.

If Option 2, Sub-Option B is selected, it would likely have short-term positive social impacts as it would allow a higher level of fishing effort to be directed on American plaice. This alternative could have a small positive impact on the overall *Size and Demographic Characteristics* of the fishery-related workforce, if it allows for higher harvest of American plaice. Long-term social impacts could be positive if this alternative successfully rebuilds the American plaice fishery. There may also be a small positive social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because Option 2, Sub-Option B would not require the most rapid stock rebuilding measures.

Sub-Option C: Option 2, Sub-Option C would revise the target rebuilding date for American plaice with a median probability of success to 2024. Fishing mortality would be above 75% F_{MSY}.

If Option 2, Sub-Option B is selected it would likely have short-term positive social impacts as it would allow a higher level of fishing effort to be directed on American plaice. This alternative could have a small positive impact on the overall *Size and Demographic Characteristics* of the fishery-related workforce, if it allows for higher harvest of American plaice. Long-term social impacts could be positive if this alternative successfully rebuilds the American plaice fishery. There may also be a small positive social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management because Option 2, Sub-Option C would not require the most rapid stock rebuilding measures.

7.5.1.2.3 Option 3: Rebuilding Plan Review Analysis for American Plaice

This option must be selected in conjunction with an above option under Option 2.

Sub-Option A: Option 3, Sub-Option A would maintain the current biennial review process.

If this Option is adopted, it could have a negative impact to the *Attitudes, Beliefs and Values* of stakeholders, who believe, when rebuilding has not occurred, additional investigation as to why is warranted. However, there could be positive impacts related to maintaining the status quo as it would continue consistent review processes across fisheries.

Sub-Option B: Option 3, Sub-Option B (with specific conditions) would establish a rebuilding plan review analysis for American plaice for use during the new rebuilding period.

If this Option is adopted, it could have a positive impact to the *Attitudes, Beliefs and Values* of stakeholders, because it would reaffirm that the most current information would be used in decision making and it could lead to more flexible and responsive management. This benefit could be offset due to the fact that this new rebuilding plan review process would only apply to the American plaice fishery. If this review process proves beneficial, stakeholders may feel that the process should be applied for all stocks in the fishery.

7.5.1.3 Annual Catch Limits

7.5.1.3.1 Option 1: No Action

Option 1, the No Action alternative, would retain constant groundfish fishery ACLs from FY2013 for FY2014-2015, with the exception of white hake, which would have an ACL of zero. There would also be no allocations for the US/Canada Resource Sharing Understanding quotas of EGB cod, EGB haddock and EGB yellowtail for FY 2014.

If Option 1 is selected, there would be a degree of constancy and predictability for fishing industry operations and a steady supply to the market (in addition to the stability provided by a two-year specifications process). Maintaining the status quo ACL would likely result in either neutral or positive social impacts. The *Size and Demographic Characteristics* of the fishery-related workforce would likely be unchanged, as would the *Historical Dependence on and Participation in* the fishery.

The zero ACL for white hake and lack of US/Canada quotas could have a large negative social impact on the individuals and communities involved with the groundfish fishery, particularly those who target white hake, EGB cod, EGB haddock or EGB yellowtail, or catch these stocks in conjunction with others. Table 29 demonstrates that landings of white hake are important to primary and secondary ports throughout the Northeast US. The Georges Banks stocks are particularly important to the ports of Portland, Gloucester, New Bedford, and Point Judith.

Such a severe limitation on fishing could cause a change in the *Size and Demographics* of the groundfish fishery by reducing the number of vessels and fishermen involved. For vessel owners who stay in the fishery, they could be forced to modify where and how they fish in an attempt to avoid these stocks, having a negative impact on the *Historic and Present Participation* in the fishery. Additionally, there may be a negative impact to the *Life-style/Non-Economic Social Aspects* of the fishery, including reduced job satisfaction caused by the restriction on these stocks and the inability of fishermen to be flexible in how they target different groundfish species. This could also cause distrust in management because the zero allocation for white hake and lack of allocation for US/Canada Resource Sharing stocks would be seen as a failure on the part of management. This could have a negative impact on the formation of *Attitudes and Beliefs.*

7.5.1.3.2 Option 2: Revised Annual Catch Limit Specifications

Option 2 would specify the annual specifications for FY2014 through FY2015 as in Table 4. For all stocks, except white hake, these specifications are the same as Option 1. Option 2 would also adopt specifications for the US/CA Resource Sharing Understanding quotas.

If Option 2 is selected, it would have generally positive social impacts relative to No Action, as the specifications increase catch limits for a majority of the stocks. The *Size and Demographic Characteristics* of the fishery-related workforce could be unchanged or experience a slight improvement, as would the *Historical Dependence on and Participation in* the fishery. Compared to Option 1/No Action alternative, it is likely that Option 2 could provide some positive social benefits for individuals and communities involved in the multispecies fishery.

U.S./Canada TACs
The U.S./Canada TACs for EGB cod, EGB Haddock and EGB yellowtail, specified under Option 2 are described in Table 2. A comparison of the proposed FY 2014 U.S. TACs and the FY 2013 U.S. TACs shown in Table 4 shows the percent change in U.S. allocations between the two years. For all three stocks, the 2014 U.S. allocation is a substantial increase (53-166%) from the 2013 allocations. This could result in positive social impacts. Vessel operators, families and communities that fish offshore, particularly those who are reliant on the groundfish fishing opportunities in EGB will experience the greatest beneficial impact from this alternative. The increased allocations provide an incentive for offshore vessels to fish offshore. This could improve the *Non-Economic Social Aspects* of fishing. There could be reduced gear conflicts with smaller vessels on inshore grounds, improving safety and reducing fishing-related stress.

7.5.2 Commercial and Recreational Fishery Measures

7.5.2.1 Small-Mesh Fishery Accountability Measures

7.5.2.1.1 Option 1: No Action

Option 1, the No Action alternative, would establish no additional Accountability Measures for the small-mesh fishery for Georges Bank yellowtail flounder. Under current AMs, if the US TAC is exceeded, the sub-ACL of the component of the fishery that caused the overage would be reduced the following fishing year by the same amount as the overage. Because the small-mesh fishery is currently prohibited from landing GB yellowtail, there is effectively no sub-ACL to reduce.

If Option 1 is selected, it could have a negative social impact on the *Attitudes, Beliefs and Values*, of the participants in the multispecies fishery, because it would perpetuate discrepancies in AMs for different components of the fishery. The perception of differential treatment could create conflicts, particularly with other components of the fishery that are subject to pound-for-pound paybacks. This could have a negative impact on the *Non-Economic Social Aspects* of the fishery.

7.5.2.1.2 Option 2: Accountability Measure for the Small-Mesh Fishery Georges Bank Yellowtail Flounder Sub-ACL

Two options (one with two sub-options) are being considered for the small-mesh fishery AM.

Sub-Option A: Under Option 2, Sub-Option A, when an overage occurs and the small-mesh fishery has a zero sub-ACL for GB yellowtail flounder, or a sub-ACL is not specified, an area closure would be implemented the following year that would prohibit vessels with small-mesh gear from fishing in the GB yellowtail flounder stock area (detailed in Section 4.2.1.2). The AM would be implemented in the fishing year following the notification of the overage.

If Option 2, Sub-Option A is selected, there are no substantial social impacts expected from creating this AM, but if this AM is triggered, it could cause a disruption in fishing practices, particularly if the fishery does not pro-actively use gear that reduces GB yellowtail flounder bycatch. As it is intended, this AM would change where the small-mesh fishery fishes, which would have an impact on the *Historic and Present Participation* in the fishery. To the small-mesh fishery, an area closure could have more negative social impacts than mandatory gear modifications. Thus, Sub-Option A may result in more negative impacts than Sub-Option B.

Option 2, Sub-Option A could have a positive impact on the *Attitudes, Beliefs and Values,* of the participants in the multispecies fishery, because it could be seen as more fair management of different components of the fishery. This may decrease conflicts, particularly with other components of the fishery that are subject to pound-for-pound paybacks. This could have a positive impact on the *Non-Economic Social Aspects* of the fishery.

Sub-Option B1: Under Option 2, Sub-Option B1, when an overage occurs in both the total ACL and the small-mesh fishery sub-ACL for GB yellowtail flounder, selective trawl gear that reduces the catch of GB yellowtail flounder would be required for vessels using small mesh gear, when fishing in GB yellowtail flounder stock area (gear and area described in Section 4.2.1.2).

If Option 2, Sub-Option B1 is selected, there are no substantial social impacts expected from creating this AM, but if this AM is triggered, it could cause a disruption in fishing practices, particularly if the fishery does not pro-actively use gear that reduces GB yellowtail flounder bycatch. Gear modifications affect changes in occupational opportunities, community infrastructure, and *Attitudes, Beliefs and Values*. Gear modifications can compromise business planning for shoreside support services and impose an economic burden on a large number of vessels. The ability to adapt to the new gear regulations would depend on vessels current economic situation and ability to cover the short-term costs of the gear. The magnitude of these impacts will depend on the cost and catch efficiency of the new gear. To the small-mesh fishery, mandatory gear modifications could have more positive social impacts than an area closure. Thus, Sub-Option B may result in more positive impacts than Sub-Option A.

Option 2, Sub-Option B1 could have a positive impact on the *Attitudes, Beliefs and Values,* of the participants in the multispecies fishery, because it could be seen as more fair management of different components of the fishery. This may decrease conflicts, particularly with other components of the fishery that are subject to pound-for-pound paybacks. This could have a positive impact on the *Non-Economic Social Aspects* of the fishery.

Sub-Option B2: Under Option 2, Sub-Option B2, when an overage occurs in small-mesh fishery sub-ACL for GB yellowtail flounder, selective trawl gear that reduces the catch of GB yellowtail flounder would be required for vessels using small mesh gear, when fishing in the GB yellowtail flounder stock area (gear and area described in Section 4.2.1.2).

If Option 2, Sub-Option B2 is selected, the social impacts could be similar to those discussed under Option B1. Additional negative impacts are possible, due to the fact that this AM would be implemented regardless of whether or not the total ACL of GB yellowtail flounder is exceeded. This could negatively impact *Values, Attitudes, and Beliefs* regarding flexibility of management if AMs are imposed on the small-mesh fishery when there is no overage on the total ACL.

7.5.2.2 Small-Mesh Fishery Measures

7.5.2.2.1 Option 1: No Action

Under Option 1, the No Action alternative, there would be no changes in pre-trip call-in requirements for small-mesh fisheries.

If Option 1 is selected, the social impacts are expected to be neutral, as it would maintain flexibility for vessels to plan fishing schedules. The small-mesh fishery is typically prosecuted only under certain weather conditions and thus, trips occur on short notice.

7.5.2.2.2 Option 2: Call-in Requirement for Small-Mesh Fisheries

Option 2 would require small-mesh fisheries to request an observer prior to leaving the dock for a trip in the Georges Bank yellowtail stock area.

If Option 2 is selected, negative social impacts on participants of the small-mesh fisheries are expected, as it could decrease flexibility in their ability to plan when to fish. This may particularly impact smaller vessels that can only fish in certain weather conditions and may not be able to take advantage of weather windows with short notice if they have to wait for a response as to whether or not an observer is assigned to the trip. Option 2 could result in diminished *Non-Economic Social Aspects* of fishing if there is decreased safety and increased stress for the small-mesh fishermen. There may be positive social impacts to the *Attitudes and Beliefs* of participants of other fisheries, as the call-in requirement would be more consistently applied across fisheries.

7.5.2.3 Management Measures for US/CA TACs

This section considers changing fishery management measures as necessary to adjust catches of US/CA stocks. More than one option can be selected.

7.5.2.3.1 Option 1: No Action

Option 1 would specify U.S./Canada TACs at the beginning of the fishing year, and no in-season adjustments would be made.

If Option 1 is selected, it could have negative social impacts by reducing the flexibility of fishing vessels. This would particularly affect communities that are more reliant on the EGB stocks (Table 29). There may also be a negative social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because Option 1would not utilize the resource to the full extent approved by U.S./Canada agreements.

Option 2: Revised in-season adjustment for US/CA TACs

Option 2 would allow the Regional Administrator to make in-season adjustments to U.S./Canada TACs. Additional allocation of quota would be consistent with current ABC distribution, including both groundfish and non-groundfish vessels.

If Option 2 is selected, there could be positive social impacts to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because Option 2 would make adjustments in as timely a manner as possible to allow vessels to utilize the resource to the full extent approved by U.S./Canada agreements. The potential additional in-season quota may also help maintain the *Historic and Present Participation* in the fishery, particularly for communities more reliant on EGB stocks (Table 29). Depending on how the revised in-season quota is distributed among fisheries (e.g. groundfish and scallops), there could be conflict between fisheries, resulting in negative impacts to the *Non-Economic Social Aspects* of fisheries.

7.5.2.3.2 Option 3: Revised in-season adjustment for US/CA TACs

Option 3 would allow the Regional Administrator to make in-season adjustments to U.S./Canada TACs. Additional allocation of quota would be consistent with the sector sub-ACL distribution.

If Option 3 is selected, there could be positive social impacts to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because it would make adjustments in as timely a manner as possible to allow vessels to utilize the resource to the full extent approved by U.S./Canada agreements. The potential additional in-season quota may also help maintain the *Historic and Present Participation* in the fishery, particularly for communities more reliant on the EGB stocks (Table 29). Since the quota received by the US in the trade would be distributed only to groundfish sector participants, other fishermen (e.g. common pool participants) may perceive Option 3 as unfair.

7.5.2.3.3 Option 4: Revised in-season adjustment for US/CA TACs

Option 4 would allow the Regional Administrator to make transboundary quota trades of groundfish, only with components of the fishery that traded away their quota. Any groundfish quota received from a trade with Canada would go only to the groundfish fishery.

If Option 4 is selected, there could be positive social impacts to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management, because it would make adjustments in as timely a manner as possible to allow vessels to utilize the resource to the full extent approved by U.S./Canada agreements. The potential additional in-season quota may also help maintain the *Historic and Present Participation* in the fishery, particularly for communities more reliant on the EGB stocks (Table 29). Option 2 also ensures that benefits of quota trades would go directly to the individuals that are trading quota. This may create a sense of fairness among participants and have a positive impact on the *Attitudes, Beliefs and Values* of fishermen regarding management.

7.5.2.3.4 Option 5: Distribution of US TACs in Eastern/Western Georges Bank

<u>Sub-Option A</u>: Option 5, Sub-Option A would allow the Regional Administrator, in consultation with the Council, to adjust the portion of the U.S. TAC for Eastern GB haddock that is available in the Eastern U.S./Canada Area.

If Option 5, Sub-Option A is selected, it could have positive social impacts by increasing the flexibility of fishing operations. This would particularly affect communities that are more reliant on EGB haddock (**Error! Reference source not found.**). There may also be a positive social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management.

Sub-Option B: Option 5, Sub-Option B would allow a sector or state-operated permit bank to convert its Eastern GB haddock ACE to Western GB haddock ACE to cover overages during the previous fishing year. This conversion may only be made within a sector or permit bank and must be approved by NMFS.

If Option 5, Sub-Option B is selected, it could have positive social impacts on the *Historical Dependence on and Participation in* the fishery by increasing the flexibility of fishing operations. This would particularly affect communities that are more reliant on EGB haddock (Table 29**Error! Reference source not found.**). There may also be a positive social impact to the *Attitudes, Beliefs and Values* of fishermen regarding the flexibility of management. Relative to Sub-Option A, Sub-Option B would have more positive impacts on the flexibility of fishing operations.

7.5.2.4 Georges Bank Yellowtail Flounder Management Measures

7.5.2.4.1 Option 1: No Action

Option 1, the No Action alternative, would maintain the status quo measures for GB yellowtail flounder, with regard to how GB yellowtail discards are calculated.

If Option 1 is selected, the social impacts would be neutral, as Option 1 continues to use the current method of accounting for discards on unobserved trips.

7.5.2.4.2 Option 2: Revised Discard Strata for GB Yellowtail Flounder

Option 2 would modify the stratification method used for estimating discards of GB yellowtail flounder, such that trips made in Statistical Area 522 would have a different calculated discard rate than the rest of GB.

If Option 2 is selected, the catch and discard rates of GB yellowtail flounder could be lower in SA 522 than the rest of GB, allowing for fishing in SA 522 with a lower risk of exceeding allocations of GB yellowtail flounder. It is important to point out that, because the GB discard rate is calculated based on observed hauls in the GB statistical areas, removing hauls with low yellowtail discards made in one area will inflate the calculated discard rate in the other areas. Removing observed hauls with low yellowtail discards made in SA 522 from the hauls used to determine the GB discard stratum, will increase the yellowtail discard rate assigned to the other GB statistical areas. It is possible that the fishing opportunities gained in SA 522 could occur at a loss in opportunity in the other GB statistical areas, because of higher calculated discard rates.

Compared to the No Action alternative, Option 2 could offer some small but positive social impacts. The perception among fishermen could be that Option 2 would provide some assurance that vessels fishing in SA 522 would not be penalized by the higher discard rates found in other stock areas. This would have a small but positive social impact on the formation of *Attitudes and Beliefs* about government and management. Other potential social impacts of adopting Option 2 are difficult to predict, because they will vary based on the calculated discard rates in SA 522 and the other GB stock areas, as well as based on the distribution of fishing in those areas.

7.5.2.5 Prohibition on Possession of Yellowtail Flounder by the Limited Access Scallop Fishery

7.5.2.5.1 Option 1: No Action

Under Option 1, there would be no trip limit for yellowtail flounder stocks for vessels in the limited access scallop fishery. These vessels would be required to land all legal-sized yellowtail flounder.

If Option 1 is selected, the social impacts are expected to be neutral. There may be positive social impacts associated with the reduced regulatory discarding of yellowtail flounder, thereby reducing the negative social impacts commonly associated with the forced discard of marketable fish. However, these could be offset by negative social impacts associated with the perception that limited access scallop vessels are targeting a bycatch species. Incentivizing the scallop fishery to target yellowtail flounder could result in exceeding their sub-ACL, the consequences of which would exceed any benefits resulting from yellowtail flounder landings.

7.5.2.5.2 Option 2: Prohibition on possession of yellowtail flounder

Under Option 2, there would be zero possession of yellowtail flounder stocks for vessels in the limited access scallop fishery. These vessels would be prohibited from landing or selling yellowtail flounder.

If Option 2 is selected, the social impacts are expected to be positive. Regulatory discarding of marketable fish causes a loss of potential revenue which can have a negative effect on the *Size and Demographic Characteristics* of the fishery. It could also cause a demoralizing sense of waste among those forced to discard marketable fish, impacting the *Non-Economic Social Aspects* of the fishery. In this particular case, there may be positive social impacts associated with the prohibition on possession of yellowtail flounder, as it will remove any incentive for targeting flounders, and therefore any perception that limited access scallop vessels are targeting a bycatch species.

7.6 Cumulative Effects Analysis

8.0 Applicable Law

8.1 Magnuson-Stevens Fishery Conservation and Management Act

8.1.1 Consistency with National Standards

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any Fishery Management Plan or Amendment be consistent with the ten national standards listed below.

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

~~Amendment 16 to the Northeast Multispecies FMP adopted measures designed to end overfishing on the groundfish stocks that were subject to excessive fishing pressure at the time of its development. This action adjusts those measures in a way that is designed to maximize optimum yield while preventing overfishing and continuing rebuilding plans. For overfished fisheries, the Magnuson-Stevens Act defines optimum yield as the amount of fish which provides for rebuilding to a level consistent with producing the maximum sustainable yield from the fishery. The measures are designed to achieve the fishing mortality rates, and yields, necessary to rebuild the overfished stocks as well as to keep fishing mortality below overfishing levels for stocks that are not in a rebuilding program. The measures in Section 4.1.1that adopt status determination criteria and ACLs set controls on catch to ensure that the appropriate fishing mortality rates are implemented. Changes to commercial and recreational fishery measures in Section 4.2 implement and adjust programs to achieve the desired mortality levels.~~

Conservation and management measures shall be based on the best scientific information available.

~~The Preferred Alternatives are based on the most recent estimates of stock status available for each of twenty stocks included in the management unit. These estimates are mostly in the form of information provided by the Northeast Fisheries Science Center in the NE Groundfish 2012 Updates Integrated Peer Review Meeting, subsequent benchmark assessments (SARC 53 for SNE/MA yellowtail flounder and SARC 55 for GOM cod and GB cod) and the most recent TRAC proceedings (2012). For all stocks under the 2012 Updates, stock size and fishing mortality in calendar year 2010 was estimated based on catch, trawl survey, observer, and other data through 2010. Management targets for this action are also based on the results of the Updates to the GARM III and benchmark assessments, which contain a comprehensive review of fishing mortality thresholds and biomass targets for the groundfish complex. Additionally, the proposed mortality limits were determined based on the scientific advice of the SSC, which recommends ABCs to the Council.~~

~~With respect to bycatch information, the action uses bycatch information from the most recent assessments. Bycatch data from observer reports, vessel logbooks, or other sources must be rigorously reviewed before conclusions can be drawn on the extent and amount of bycatch. While additional observer data has been collected since the most recent assessments were completed, it has not been analyzed or reviewed through the stock assessment process and thus cannot be used.~~

~~The economic analyses in this document are based primarily on landings, revenue, and effort information collected through the NMFS data collection systems used for this fishery.~~

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

~~The Preferred Alternatives manage each individual groundfish stock as a unit throughout its range. Management measures specifically designed for one stock are applied to the entire range of the stock. In addition, the groundfish complex as a whole is managed in close coordination. Management measures are designed and evaluated for their impact on the fishery as a whole.~~

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

~~The Preferred Alternatives do not discriminate between residents of different states. They are applied equally to all permit holders, regardless of homeport or location. While the measures do not discriminate between permit holders, they do have different impacts on different participants. This is because of the differences in the distribution of fish and the varying stock levels in the complex. These distributive impacts are difficult to avoid given the requirement to rebuild overfished stocks. Even if the measures are designed to treat all permit holders the same, the fact that fish stocks are not distributed evenly, and that individual vessels may target specific stocks, means that distributive impacts cannot be avoided.~~

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

~~The Preferred Alternatives are not expected to significantly reduce the efficiency of fishing vessels. These measures are considered practicable since they allow rebuilding of depleted groundfish stocks and have considered efficiency to the greatest extent possible. Some of the Preferred Alternatives in fact increase efficiency, including the establishment of allocating groundfish to the scallop fishery access areas and revising of discard strata for GB yellowtail flounder. None of the measures in this action have economic allocation as their sole purpose – all are designed to contribute to the control of fishing mortality.~~

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

~~The primary effort controls used in this management plan – effort controls and sectors – allow each vessel operator to fish when and how it best suits his or her business. Vessels can make short or long trips, and can fish in any open area at any time of the year. The measures allow for the use of different gear, vessel size, and fishing practices. The specific measures adopted in this action do not reduce this flexibility.~~

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

~~While some of the measures used in the management plan, and proposed by this action, tend to increase costs, those measures are necessary for achieving the plan's objectives. Other proposed measures specifically aim to reduce costs such as removing dockside monitoring requirements, limiting industry responsibility for at-sea monitoring and deferring industry responsibility until after FY 2013. These measures accomplish other goals, however, by allowing groundfish stocks to rebuild. The~~

~~measures do not duplicate other regulatory efforts. Other measures, including allowing sector exemption requests to closed areas allow vessels more flexibility and can minimize costs. Management of multispecies stocks in federal waters is not subject to coordinated regulation by any other management body. Absent Council action, a coordinated rebuilding effort to restore the health of the overfished stocks would not occur.~~

~~The Council considered the costs and benefits of a range of alternatives to achieve the goals and objectives of this FMP. It considered the costs to the industry of taking no action relative to adopting the measures herein. The expected benefits are greater in the long-term if stocks are rebuilt, though it is clear there are substantial short-term declines in revenue and possible increases in costs that can be expected.~~

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

~~Consistent with the requirements of the Magnuson-Stevens Act to prevent overfishing and rebuild overfished stocks, the Preferred Alternatives may restrict fishing activity through the implementation of low ACLs on certain stocks in order to achieve rebuilding targets. Analyses of the impacts of these measures show that landings and revenues are likely to decline for many participants in upcoming years due to the rebuilding programs in place for many stocks. In the short term, these declines will probably have negative impacts on fishing communities throughout the region, but particularly on those ports that rely heavily on groundfish. These declines are unavoidable given the M-S Act requirements to rebuild overfished stocks. The need to control fishing mortality means that catches cannot be as high as would likely occur with less stringent management measures.~~

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

~~Many measures adopted in Amendment 16 were designed to limit the discards of both groundfish and some other species, including the sector management program, and this action is expected to continue those benefits with no substantial changes.~~

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

~~Measures adopted in Amendment 16 were designed to improve safety in spite of low ACLs anticipated by subsequent actions in the near future. The flexibility inherent in sector management and the ability to use common pool DAS at any time are key elements of the measures that promoted safety. The Preferred Alternatives, the removal of trawl gear stowage requirement in particular, are the best option for achieving the necessary mortality reductions while having the least impact on vessel safety.~~

8.1.2 Other M-SFCMA requirements

Section 303 (a) of FCMA contains 14 required provisions for FMPs. These are discussed below. It should be emphasized that the requirement is imposed on the FMP. In some cases noted below, the M-S Act requirements are met by information in the Northeast Multispecies FMP, as amended. Any fishery management plan that is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

Foreign fishing is not allowed under this management plan or this action and so specific measures are not included to specify and control allowable foreign catch. The measures in this management plan are designed to prevent overfishing and rebuild overfished stocks. There is one international agreement that is germane to multispecies management. On December 20, 2010, the International Fisheries Clarification Act stipulated that the U.S./Canada Resource Sharing Understanding, implemented through Amendment 13, can be considered an international agreement for the purposes of setting ACLs. The proposed measures are consistent with that Understanding.

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

Amendment 16 included a thorough description of the multispecies fishery from 2001 through 2008, including the gears used, number of vessels, landings and revenues, and effort used in the fishery. This action provides a summary of that information and additional relevant information about the fishery in Section 6.5.

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

The present biological status of the fishery is described in Section 6.2. Likely future conditions of the resource are described 7.6.5. Impacts resulting from other measures in the management plan other than the specifications included here can be found in Amendment 16. The maximum sustainable yield for each stock in the fishery is defined in Amendment 16 and optimum yield for the fishery is defined in Amendment 9.

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

U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from this fishery as specified in Amendment 16 and Frameworks 44, 45 and 47. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing.

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

Current reporting requirements for this fishery have been in effect since 1994 and were originally specified in Amendment 5. They were slightly modified in Amendments 13 and 16, and VMS requirements were adopted in FW 42. The requirements include Vessel Trip Reports (VTRs) that are submitted by each fishing vessel. Dealers are also required to submit reports on the purchases of regulated groundfish from permitted vessels. Current reporting requirements are detailed in 50 CFR 648.7.

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

Provisions in accordance with this requirement were implemented in earlier actions, and continue with this action. For common pool vessels, the carry-over of a small number of DAS is allowed from one fishing year to the next. If a fisherman is unable to use all of his DAS because of weather or other conditions, this measure allows his available fishing time to be used in the subsequent fishing year. Sectors will also be allowed to carry forward a small amount of ACE into the next fishing year. This will help sectors react should adverse weather interfere with harvesting the entire ACE before the end of the year. Neither of these practices requires consultation with the Coast Guard.

describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

Essential fish habitat was defined for Atlantic wolffish in Amendment 16, and for all stocks in an earlier action. A summary of the EFH can be found in Section 7.2.3.

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

Scientific and research needs are not required for a framework adjustment. Current research needs are identified in Amendment 16.

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

Impacts of this framework on fishing communities directly affected by this action and adjacent areas can be found in Section 7.5.

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

Objective and measurable Status Determination Criteria for all species in the management plan are presented in Amendment 16.

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

The Standardized Bycatch Reporting Methodology omnibus amendment was dismissed by the U.S. Court of Appeals for the District of Columbia Circuit in 2011 (No. 10-5299 Oceana, Inc. v. Gary F. Locke). That method no longer applies to this framework. The revision of minimum fish sizes are expected to reduce regulatory discards.

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

This management plan does not include a catch and release recreational fishery management program and thus does not address this requirement.

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

As noted above, the description of the commercial, recreational, and charter fishing sectors was fully developed in Amendment 16, and the commercial sector is updated and summarized in this document (Section 6.5).

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

This preferred alternative does not allocate harvest restrictions or stock benefits to the fishery. Such allocations were adopted in Amendment 16, while this action adopts Status Determination Criteria for some stocks.

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

This action does not specify ACLs for groundfish stocks and does not meet this requirement.

8.1.3 EFH Assessment

This essential fish habitat (EFH) assessment is provided pursuant to 50 CFR 600.920(e) of the EFH Final Rule.

8.1.3.1 Description of Action

Framework 51 adopts modifications to the management program. The Preferred Alternatives include:

Location of proposed action and overlap with designated EFH

-

In general, the activity described by this action, fishing for groundfish species, occurs off the New England and Mid-Atlantic coasts within the U.S. EEZ. This range of activity encompasses designated EFH for numerous species managed by both the New England and Mid-Atlantic Fishery Management Councils, as described in the Affected Environment section of this document. EFH designated for species managed under the Secretarial Highly Migratory Species FMPs are not affected by this action, nor is any EFH designated for species managed by the South Atlantic Council as all of the relevant species are pelagic and not directly affected by benthic habitat impacts.

8.1.3.2 Potential Adverse Effects of the Action on EFH

Potential anticipated changes in adverse effects of the groundfish fishery on EFH as a result of the proposed action are summarized below. Measures are grouped according to those expected to have negative impacts, neutral impacts, positive impacts, and uncertain impacts. Those measures that could potentially result in adverse effects are discussed further below the table. Measures associated with neutral, positive, or uncertain changes in adverse effects are not discussed further here. See the EFH impacts section of this document for additional information.

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

8.1.3.4 Conclusions

8.2 National Environmental Policy Act (NEPA)

NEPA provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the M-S Act and NEPA. The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents (40 CFR 1500 – 1508), as has NOAA in its agency policy and procedures for NEPA in NAO 216-6 §5.04b.1. All of those requirements are addressed in this document, as referenced below.

8.2.1 Environmental Assessment

8.2.2 Finding of No Significant Impact (FONSI)

National Oceanic and Atmospheric Administration Order (NAO) 216-6 (revised May 20, 1999) provides nine criteria for determining the significance of the impacts of a final fishery management action. These criteria are discussed below:

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

Response:

(2) *Can the Preferred Alternatives reasonably be expected to jeopardize the sustainability of any non- target species?*

Response:

(3) *Can the Preferred Alternatives reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?*

Response:

(4) *Can the Preferred Alternatives be reasonably expected to have a substantial adverse impact on public health or safety?*

Response:

(5) *Can the Preferred Alternatives reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?*

Response:

(6) *Can the Preferred Alternatives 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.)?*

Response:

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

Response:

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

Response:

(9) *Can the Preferred Alternatives 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?*

Response:

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

Response:

(11) *Is the Preferred Alternative related to other actions with individually insignificant, but cumulatively significant impacts?*

Response:

(12) *Are the Preferred Alternatives likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural or historical resources?*

Response:

(13) *Can the Preferred Alternatives reasonably be expected to result in the introduction or spread of a non-indigenous species?*

Response:

(14) *Are the Preferred Alternatives likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?*

Response:

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

Response:

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

Response:

FONSI STATEMENT:

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Framework Adjustment 48 to the Northeast Multispecies Fishery Management Plan, it is hereby determined that Framework Adjustment 48 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 required.

Northeast Regional Administrator, NOAA Date

8.2.3 List of Preparers; Point of Contact

Questions concerning this document may be addressed to:

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8.2.4 Agencies Consulted

The following agencies were consulted in the preparation of this document:

Mid-Atlantic Fishery Management Council

New England Fishery Management Council, which includes representatives from the following additional organizations:

- Connecticut Department of Environmental Protection
- Rhode Island Department of Environmental Management
- Massachusetts Division of Marine Fisheries
- New Hampshire Fish and Game
- Maine Department of Marine Resources

National Marine Fisheries Service, NOAA, Department of Commerce

United States Coast Guard, Department of Homeland Security

8.2.5 Opportunity for Public Comment

The Preferred Alternatives were developed during the period …2013 through ….2013 and was discussed at the following meetings. Opportunities for public comment were provided at each of these meetings.

Date	**Meeting Type**	**Location**
6/18-20/13	Council Meeting	Portland, ME
7/10/13	GF PDT Conference Call	
7/30/13	Groundfish PDT Conference Call	
8/14/13	Oversight Committee Meeting	Holiday Inn, Peabody, MA
8/26/13	Groundfish PDT	Radisson, Plymouth, MA
9/13/13	Groundfish PDT Conference Call	
9/16/13	Groundfish Advisory Panel Meeting	Holiday Inn, Portsmouth, NH
9/17/13	Oversight Committee Meeting	Holiday Inn, Portsmouth, NH
9/24-9/26/13	Council Meeting	Cape Codder Hotel, Hyannis, MA
10/22/13	Groundfish PDT Conference Call	
10/28/13	Groundfish PDT Meeting	NMFS Office, Gloucester, MA
11/5/13	Groundfish PDT Conference Call	
11/13/13	Groundfish PDT Conference Call	

Date	Meeting Type	Location
11/18-19/13	Oversight Committee Meeting	Newport Marriott, Newport, RI
11/20/13	Council Meeting	Newport Marriott, Newport, RI
12/9/13	Oversight Committee Meeting	Omni Hotel, Providence, RI

8.3 Endangered Species Act

Section 7 of the Endangered Species Act 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 NEFMC has concluded, at this writing, that the proposed framework adjustment and the prosecution of the multispecies fishery is not likely to jeopardize any ESA- listed species or alter or modify any critical habitat, based on the discussion of impacts in this document and on the assessment of impacts in the Amendment 16 Environmental Impact Statement.

The Council does acknowledge that endangered and threatened species may be affected by the measures proposed, but impacts should be minimal especially when compared to the prosecution of the fishery prior to implementation of Amendment 16. The NEFMC is now seeking the concurrence of the National Marine Fisheries Service with respect to Framework Adjustment 48.

For further information on the potential impacts of the fishery and the proposed management action on listed species, see Section 7.3 of this document.

8.4 Marine Mammal Protection Act

The NEFMC has reviewed the impacts of the Preferred Alternatives on marine mammals and has concluded that the management actions proposed are consistent with the provisions of the MMPA. Although they are likely to affect species inhabiting the multispecies management unit, the measures will not alter the effectiveness of existing MMPA measures, such as take reduction plans, to protect those species based on overall reductions in fishing effort that have been implemented through the FMP

For further information on the potential impacts of the fishery and the proposed management action on marine mammals, see Section 7.3 of this document.

8.5 Coastal Zone Management Act

Section 307(c)(1) of the Federal CZMA 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 Section 930.36(c) of the regulations implementing the Coastal Zone Management Act, NMFS made a general consistency determination that the Northeast Multispecies Fishery Management Plan (FMP), including Amendment 16, and Framework Adjustment 47, is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. This general consistency determination applies to the current NE Multispecies Fishery Management Plan (FMP), and all subsequent routine federal actions carried out in accordance with the FMP such as Framework

Adjustments and specifications. A general consistency determination is warranted because Framework Adjustments to the FMP are repeated activities that adjust the use of management tools previously implemented in the FMP. A general consistency determination avoids the necessity of issuing separate consistency determinations for each incremental action. This determination was submitted to the above states on October 21, 2009. To date, the states of North Carolina, Rhode Island, Virginia, Connecticut, New Hampshire, and Pennsylvania have concurred with the General Consistency Determination. Consistency was inferred for those states that did not respond.

8.6 Administrative Procedure Act

This action was developed in compliance with the requirements of the Administrative Procedure Act, and these requirements will continue to be followed when the proposed regulation is published. 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.

8.7 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.

8.7.1 Utility of Information Product

The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the Preferred Alternatives on, the measures proposed, and the impacts of those measures. A discussion of the reasons for selecting the Preferred Alternatives is included so that intended users may have a full understanding of the Preferred Alternatives 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.

This document is available in several formats, including printed publication, CD-ROM, and online through the Council's web page in PDF format. 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.

8.7.2 Integrity of Information Product

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, "Security 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.

8.7.3 Objectivity of Information Product

For purposes of the Pre-Dissemination Review, this document is considered to be a "Natural Resource Plan." Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat 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. These update assessments were reviewed by the SAW 54 (NEFSC 2012), the NE Groundfish 2012 Updates Integrated Peer Review Meeting (NEFSC 2012), and SAW 55 (NEFSC 2013) which all included participation by independent stock assessment scientists. 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 Groundfish Plan Development Team/Monitoring Committee.

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 Preferred Alternatives were conducted using information from the most recent complete calendar years, through 2011, and in some cases includes information that was collected during the first eight months of calendar year 2012. Complete data were not available for calendar year 2012. The data used in the analyses provide the best available information on the number of harvesters in the fishery, the catch (including landings and discards) by those harvesters, the sales and revenue of those landings to dealers, the type of permits held by vessels, the number of DAS used by those vessels, the catch of recreational fishermen and the location of those catches, and the catches and revenues from various special management programs. 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 the groundfish fishery.

The policy choices are clearly articulated, in Section 4.0 of this document, as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are summarized and described in Section 7.0 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.

8.8 Executive Order 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 in FW 48. 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.

8.9 Executive Order 13158 (Marine Protected Areas)

The Executive Order on Marine Protected Areas requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The E.O. directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the Order. The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. As of the date of submission of this FMP, the list of MPA sites has not been developed by the departments. No further guidance related to this Executive Order is available at this time.

8.10 Paperwork Reduction Act

The purpose of the PRA 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. The authority to manage information and recordkeeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

FW 51 does not modify existing collection of information requirements implemented by previous amendments to the FMP that are subject to the PRA, including:

- Reporting requirements for SAPs and the Category B (regular) DAS Program;
- Mandatory use of a Vessel Monitoring System (VMS) by all vessels using a groundfish DAS;
- Changes to possession limits, which will change the requirements to notify NMFS of plans to fish in certain areas; and
- Provisions to allow vessel operators to notify NMFS of plans to fish both inside and outside the Eastern U.S./CA area on the same fishing trip.

8.11 Regulatory Impact Review

8.11.1 Executive Order 12866

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 8.11 of this document represents the RIR, 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 RIR 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.

E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may:

- Have an annual effect on the economy of $100 million or more, or adversely affect, in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

A more detailed discussion of economic impact is provided in Section 7.4. The discussion to follow provides a summary of those findings.

8.11.1.1 Objectives

The goals and objectives of Framework Adjustment 48 are the same as those detailed in Amendment 16 to the Northeast Multispecies Fishery FMP and are as follows:

Goal 1: Consistent with the National Standards and other required provisions of the Magnuson- Stevens Fishery Conservation and Management Act and other applicable law, manage the northeast multispecies complex at sustainable levels.

Goal 2: Create a management system so that fleet capacity will be commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.

Goal 3: Maintain a directed commercial and recreational fishery for northeast multispecies.

Goal 4: Minimize, to the extent practicable, adverse impacts on fishing communities and shoreside infrastructure.

Goal 5: Provide reasonable and regulated access to the groundfish species covered in this plan to all members of the public of the United States for seafood consumption and recreational purposes during the stock rebuilding period without compromising the Amendment 13 objectives or timetable. If necessary, management measures could be modified in the future to insure that the overall plan objectives are met.

Goal 6: To promote stewardship within the fishery.

Objective 1: Achieve, on a continuing basis, optimum yield (OY) for the U.S. fishing industry.

Objective 2: Clarify the status determination criteria (biological reference points and control rules) for groundfish stocks so they are consistent with the National Standard guidelines and applicable law.

Objective 3: Adopt fishery management measures that constrain fishing mortality to levels that are compliant with the Sustainable Fisheries Act.

Objective 4: Implement rebuilding schedules for overfished stocks, and prevent overfishing.

Objective 5: Adopt measures as appropriate to support international transboundary management of resources.

Objective 6: Promote research and improve the collection of information to better understand groundfish population dynamics, biology and ecology, and to improve assessment procedures in cooperation with the industry.

Objective 7: To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation.

Objective 8: Develop biological, economic and social measures of success for the groundfish fishery and resource that insure accountability in achieving fishery management objectives.

Objective 9: Adopt measures consistent with the habitat provisions of the M-S Act, including identification of EFH and minimizing impacts on habitat to the extent practicable.

Objective 10: Identify and minimize bycatch, which include regulatory discards, to the extent practicable, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

8.11.1.2 Description

A description of the entities affected by this framework adjustment, specifically the stakeholders of the New England Groundfish Fishery, is provided in Section 6.5.1 of this document.

8.11.1.3 Problem Statement

The need and purpose of the actions proposed in this Framework Adjustment are set forth in Section 3.2 of this document and are incorporated herein by reference.

8.11.1.4 Analysis of Alternatives

This section provides an analysis of each proposed alternative of FW51 as mandated by EO 12866. The focus will be on the expected changes 1) in net benefits and costs to stakeholders of the New England Groundfish Fishery, 2) changes to the distribution of benefits and costs within the industry, 3) changes in income and employment, 4) cumulative impacts of the regulation, and 5) changes in other social concerns. Much of this information is captured already in the detailed economic impacts and social impacts analyses of Sections 7.4 and 7.5 of this document. This RIR will summarize and highlight the major findings of the economic impacts analysis provided in Section 7.4 of this document, as mandated by EO 12866. For social impacts of each alternative, see Section 7.5.

When assessing net benefits and costs of the regulations, it is important to note that the analysis will focus on producer surplus only, namely the impacted fishing businesses. Consumer surplus is not expected to be affected by any of the regulatory changes proposed in FW51, given the large supply of domestic and foreign seafood imports. It is also important to note that much of the analysis included in the RIR is qualitative given the nature of the proposed regulation, available data, and uncertainty of outcomes.

8.11.1.4.1 Updates to Status Determination Criteria, Formal Rebuilding Programs and Annual Catch Limits

8.11.1.4.1.1 Revised Gulf of Maine Cod Rebuilding Strategy

8.11.1.4.1.1.1 Option 1: No Action

8.11.1.4.1.1.2 Option 2: Revised Rebuilding Strategy for Gulf of Maine Cod

8.11.1.4.1.1.3 Option 3: Rebuilding Plan Review Analysis for Gulf of Maine Cod

8.11.1.4.1.2 Revised American Plaice Rebuilding Strategy
8.11.1.4.1.2.1 Option 1: No Action
8.11.1.4.1.2.2 Option 2: Revised Rebuilding Strategy for American Plaice
8.11.1.4.1.2.3 Option 3: Rebuilding Plan Review Analysis for American Plaice
8.11.1.4.1.3 Annual Catch Limits
8.11.1.4.1.3.1 Option 1: No Action
8.11.1.4.1.3.2 Option 2: Revised Annual Catch Limit Specifications
8.11.1.4.2 Commercial and Recreational Fishery Measures
8.11.1.4.2.1 Small-Mesh Fishery Accountability Measures
8.11.1.4.2.1.1 Option 1: No Action
8.11.1.4.2.1.2 Option 2: Accountability Measure for the Small-Mesh Fishery Georges Bank Yellowtail Flounder Sub-ACL
8.11.1.4.2.2 Small-Mesh Fishery Measures
8.11.1.4.2.2.1 Option 1: No Action
8.11.1.4.2.2.2 Option 2: Call-In Requirement for Small-Mesh Fisheries
8.11.1.4.2.3 Management Measures for US/CA TACs
8.11.1.4.2.3.1 Option 1: No Action
8.11.1.4.2.3.2 Option 2: Revised In-Season Adjustment for US/CA TACs
8.11.1.4.2.3.3 Option 3: Revised In-Season Adjustment for US/CA TACs
8.11.1.4.2.3.4 Option 4: Revised In-Season Adjustment for US/CA TACs
8.11.1.4.2.3.5 Option 5: Distribution of US TACs for Eastern/Western Georges Bank Haddock
8.11.1.4.2.4 Georges Bank Yellowtail Flounder Management Measures
8.11.1.4.2.4.1 Option 1: No Action
8.11.1.4.2.4.2 Option 2: Revised Discard Strata for GB Yellowtail flounder
8.11.1.4.2.5 Prohibition on Possession of Yellowtail Flounder by the Limited Access Scallop Fishery

8.11.1.4.2.5.1 Option 1: No Action

8.11.1.4.2.5.2 Option 2: Prohibition on Possession of Yellowtail Flounder

8.11.1.5 Determination of Significance

8.11.2 Regulatory Flexibility Act

8.11.2.1 Introduction

The purpose of the Regulatory Flexibility Analysis (RFA) is to establish as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure such proposals are given serious consideration. The RFA does not contain any decision criteria; instead the purpose of the RFA is to inform the agency, as well as the public, of the expected economic impacts of various alternatives contained in the FMP or amendment (including framework management measures and other regulatory actions) and to ensure the agency considers alternatives that minimize the expected impacts while meeting the goals and objectives of the FMP and applicable statutes.

With certain exceptions, the RFA requires agencies to conduct an IRFA for each proposed rule. The IRFA is designed to assess the impacts various regulatory alternatives would have on small entities, including small businesses, and to determine ways to minimize those impacts. An IRFA is conducted to primarily determine whether the proposed action would have a “significant economic impact on a substantial number of small entities.” In addition to analyses conducted for the RIR, the IRFA provides: 1) A description of the reasons why action by the agency is being considered; 2) a succinct statement of the objectives of, and legal basis for, the proposed rule; 3) a description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply; 4) a description of the projected reporting, record-keeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirements of the report or record; and, 5) an identification, to the extent practicable, of all relevant federal rules, which may duplicate, overlap, or conflict with the proposed rule.

8.11.2.2 Description of reasons why action by the Agency is being considered

8.11.2.3 Statement of the objectives of, and legal basis for, the proposed rule

8.11.2.4 Description and estimate of the number of small entities to which the proposed rule will apply

The Small Business Administration (SBA) defines a small business as one that is:

- independently owned and operated
- not dominant in its field of operation
- has annual receipts not in excess of:
  - $4.0 million in the case of commercial harvesting entities, or
  - $7.0 million in the case of for-hire fishing entities
- or if it has fewer than:
  - 500 employees in the case of fish processors, or

- 100 employees in the case of fish dealers.

This framework action impacts mainly commercial harvesting entities engaged in the limited access groundfish as well as both the limited access general category and limited access scallop fisheries.

Regulated Commercial Harvesting Entities

Limited Access groundfish harvesting permits
The limited access groundfish fisheries are further sub-classified as those enrolled in the Sector allocation program and those in the Common Pool. Sector vessels are subject to sector-level stock-specific Annual Catch Entitlements (ACE) that limit catch of allocated groundfish stocks. Accountability measures (AMs) include a prohibition on fishing inside designated areas once 100% of available sector ACE has been caught, as well as area-based gear and effort restrictions that are triggered when catch of non- allocated groundfish stocks exceed Allowable Catch Limits (ACLs). Common Pool vessels are subject to various days-at-sea and trip limits designed to keep catches below ACLs set for vessels enrolled in this program. In general, sector-enrolled businesses rely more heavily on sales of groundfish species than common pool-enrolled vessels. At the beginning of the 2012 Fishing Year (May 1, 2012) there were 1,382 individual limited access permits. Each of these was eligible to join a sector or enroll in the common pool. Alternatively they could also allow their permit to expire by failing to renew it. 827 permits were enrolled in the sector program and 584 were in the common pool.

Limited access scallop harvesting permits
The limited access scallop fisheries are further sub-classified as Limited Access (LA) scallop permits and Limited Access General Category (LAGC) scallop permits. LA scallop permit businesses are subject to a mixture of days-at-sea (DAS) and dedicated area trip restrictions. LAGC scallop permit businesses are able to acquire and trade LAGC scallop quota and there is an annual cap on quota/landings. At the beginning of the 2012 Fishing Year (March 1, 2012) there were 342 active LA scallop and 603 active LAGC permits.

Permit-level data are presented for illustrative purposes, with gross receipts averaged across CY 2010-2012.

Table 144 - Number of permits held in potentially impacted fisheries

Table 145 - Gross sales associated with potentially impacted permits

Ownership entities in regulated commercial harvesting businesses
Individually-permitted vessels may hold permits for several fisheries, harvesting species of fish that are regulated by several different fishery management plans, even beyond those impacted by the proposed action. Furthermore, multiple permitted vessels and/or permits may be owned by entities affiliated by stock ownership, common management, identity of interest, contractual relationships or economic dependency. For the purposes of this analysis, ownership entities are defined by those entities with common ownership personnel as listed on permit application documentation. Only permits with identical ownership personnel are categorized as an ownership entity. For example, if five permits have the same seven personnel listed as co-owners on their application paperwork, those seven personnel form one ownership entity, covering those five permits. If one or several of the seven owners also own

additional vessels, with sub-sets of the original seven personnel or with new co-owners, those ownership arrangements are deemed to be separate ownership entities for the purpose of this analysis.

A note about Sectors as ownership entities in the groundfish fishery
Vessels electing to fish under the sector management system may join a sector where their individual allocations of stock-specific fishing quota (called "Potential Sector Contributions" or PSC) become pooled. Vessels individually do not have a right to catch their PSC--it becomes fishable quota (called Annual Catch Entitlement, or ACE) only when that vessel enrolls in a sector.

Section 3 of the Small Business Act defines affiliation as:
Affiliation may arise among two or more persons with an identity of interest. Individuals or firms that have identical or substantially identical business or economic interests (such as family members, individuals or firms with common investments, or firms that are economically dependent through contractual or other relationships) may be treated as one party with such interests aggregated (13 CFR 121.103(f)).

An argument can be made that sectors themselves, and not individual vessels, are impacted by regulations pertaining to the groundfish fishery, especially those that adjust the PSC of individual vessels. For the purposes of this analysis, however, impacted entities will be defined at the ownership entity level and not at the sector level, for three reasons:

1. This proposed action does not directly adjust PSC or ACE for vessels or sectors, the primary driver of sector-level dependency.
2. While sector vessels have substantially identical business interests and are economically dependent on one another through their contractual relationship, many of those vessels—if not most—obtain harvesting receipts outside of the sector system by participating in non-groundfish fisheries. These receipts are not part of their respective sector's operations and in most cases lie outside of the contractual relationship established by the sector program.
3. Many ownership entities have interests inside and outside of the Sector program. Receipts from affiliated vessels that are otherwise unaffiliated with Sectors are difficult to disentangle.

A summary of regulated ownership entities within potentially impacted fisheries
Ownership data are available for the four primary sub-fisheries potentially impacted by the proposed action from 2010 onward. However, current data do not support a common ownership entity data field across years. For this reason only one year's gross receipts will be reported and calendar year 2011 will serve as the baseline year for this analysis. Calendar year 2012 data are not yet available in a fully audited form.

In 2011 there were 1,370 distinct ownership entities identified. Of these, 1,312 are categorized as small and 58 are large entities as per SBA guidelines.

These totals may mask some diversity among the entities. Many, if not most, of these ownership entities maintain diversified harvest portfolios, obtaining gross sales from many fisheries and not dependent on any one. However, not all are equally diversified. Those that depend most heavily on sales from harvesting species impacted directly by the proposed action are most likely to be affected. By defining dependence as deriving greater than 50% of gross sales from sales of either regulated groundfish or from scallops, we are able to identify those ownership groups most likely to be impacted by the proposed regulations. Using this threshold, we find that 135 entities are groundfish-dependent with 131 small and four large. We find that 47 entities are scallop-dependent with 39 small and 8 large.

Table 146 - Description of entities regulated by the Proposed Action

Table 147 - Description of groundfish and scallop dependent entities regulated by the Proposed Action

8.11.2.5 Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records

8.11.2.6 Identification of all relevant Federal rules, which mya duplicate, overlap or conflict with the proposed rule

8.11.2.7 Significance of economic impacts on small entities

8.11.2.8 Description of significant alternatives to the proposed rule and discussion of how the alternatives attempt to minimize economic impacts on small entities

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