

Framework Adjustment 44 to the Northeast Multispecies Fishery Management Plan

Including an
Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

Prepared by the
New England Fishery Management Council
in consultation with the
Mid-Atlantic Fishery Management Council
National Marine Fisheries Service

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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 if approved will become 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 specifications for the fishery. This action is the result of that decision.

Amendment 16 included several major changes to the FMP. For several groundfish stocks, the mortality targets adopted by Amendment 16 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 measures that will selectively change mortality 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 is 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.

Because of a large amount of uncertainty over sector membership and other information, the Council determined that to the extent fishing behavior changes in ways not predicted by the analytic tools used to analyze Amendment 16 measures, there may be less certainty about achieving the mortality objectives of Amendment 16 if the management measures are not changed. This Framework to the FMP is therefore proposed to adopt modifications that will provide greater certainty mortality targets will be met, in addition to setting specifications for the fishery in Fishing Years 2010 through 2012. It is intended to be implemented on May 1, 2010, concurrently with the implementation of Amendment 16.

Proposed Action

This action implements a range of measures designed to determine specifications for the fishery and modify effort control measures to achieve mortality targets. Details of the measures summarized below can be found in section 3.0. The measures being considered associated with changes to management of the fishery include:

- *Annual Catch Limit specifications:* ACLs are adopted for each managed stock for Fishing Years 2010 through 2012. Acceptable Biological Catch (ABC) figures are adopted based on stock status developed by the Northeast Fisheries Science Center, and the ACLs are calculated after the ABCs are appropriately adjusted for management uncertainty. The ACL, ABC, and overfishing level for each stock is presented in Table 2.

- *Yellowtail Flounder Allocation to the scallop fishery:* The scallop fishery will receive an allocation of 100% of the yellowtail flounder that is projected to be necessary to fully harvest the scallop ACL in FY 2010, and 90% of what is projected to be necessary in FY 2011 and 2012.
- *U.S./Canada Resource Sharing Understanding TACs:* hard TACs for the U.S./Canada Management Area are specified for FY 2010.
- *Commercial Fishery Effort Control Modification:* Effort control measures for common pool vessels are modified because of uncertainty over future sector membership and the possibility that fishing behavior may change in ways not predicted by the analytic tools used to develop Amendment 16.
 - The following *trip limits* are adopted:
 - GOM cod 800 lbs. per DAS and 4,000 lbs. Handgear A permits will have a trip limit of 300 lbs., while Handgear B permits will be limited to 75 lbs. per trip
 - GOM pollock 1,000 lbs. per DAS, and 10,000 lbs. per trip.
 - For scallop fishery boats only, there will be no trip limit for yellowtail flounder. Limited access scallop vessels will be required to land all legal-sized yellowtail flounder that is caught.
 - *In-season modifications by the RA:* The Regional Administrator of the National Marine Fisheries Service (NMFS) will have the authority to modify effort control measures, including possession limits and DAS counting rates, at any time during the year to increase the likelihood that ACLs will be met and not exceeded.

Summary of Environmental Consequences

The environmental impacts of this action are discussed in detail in section 6.0. Estimating the impacts of the Proposed Action is difficult because of the continuing uncertainty over membership in sectors, as measures will affect sector and common pool members differently. The overall impacts will depend on how many vessels choose to operate in each. While there is a current estimate of the number of vessels that will be in sectors, the final actual number will not be known until the start of Fishing Year 2010 (FY 2010) because vessels can choose to fish outside of sectors until that date.

Biological impacts are described in section 7.2, impacts on endangered and other protected species are described in section 7.3, impacts on essential fish habitat are described in section 7.4, the economic impacts are described in section 7.5, and social impacts are described in section 7.6. Cumulative effects are described in section 7.8. Summaries of the impacts are provided in the following paragraphs.

Biological Impacts

The measures that constitute the Proposed Action are designed to achieve the rebuilding objectives for the Northeast Multispecies fishery. The most important biological impact of the proposed measures is that they will control fishing mortality on Northeast Multispecies stocks in order to prevent (or end) overfishing and rebuild overfished stocks. The critical measures for these impacts are the specification of ACLs, and the modifications to trip limits and in-season adjustments for common pool effort controls.

Essential Fish Habitat (EFH) Impacts

No adverse impacts on EFH are expected to result from the Proposed Action. Impacts are expected to be neutral, and the overall reduction in effort expected as a result of this action and Amendment 16 is expected to benefit habitat by reducing the interaction of groundfish fishing vessels with EFH.

Impacts on Endangered and Other Protected Species

None of the measures proposed in Framework 44 are likely to produce impacts to protected species beyond those described in previous regulations. As with EFH, the impacts are not quantifiable but are expected to be beneficial as a result of overall reductions in groundfish fishing effort resulting from the specifications in this framework in conjunction with Amendment 16 measures.

Economic Impacts

The setting of specifications for the multispecies fishery will cap the potential revenue that can be earned by vessels fishing under the federal management plan. These vessels account for more than 95 percent of total groundfish revenue for most stocks. Using average FY 2007 and 2008 prices and assuming the entire commercial ACL is landed, the potential revenues from the proposed ACLs are \$198.5 million in FY 2010, increase to \$216.5 million in FY 2011, and decline to \$206.8 million in FY 2012 (Table 88). These revenues are highly dependent on landings of GB haddock, which account for more than half the total revenues and is the reason why estimated potential revenues decline in 2012 as the contribution of the 2003 year to fishing revenue is diminishing. As discussed in section 3.1.1, the ABCs for GB cod and GB haddock assume no Canadian catch in 2011 and 2012, so these estimates are biased high, but are believed to fall within the range expected impacts.

As noted above it is unlikely that the entire ACL will be harvested particularly for GB haddock due to its large stock size and also because of discarding. It is more realistic to assume GB haddock landings may increase from current levels, but the entire ACL will not be harvested since the ACL is several times larger than any recent landings amount. Approximation of potential revenues is complicated by the fact that vessel owners fishing in sectors formed under Amendment 16 may be expected to have an incentive to fish in a more selective manner than may have been the case in the past. When all of these factors are considered, there is a potential reduction in groundfish revenue of approximately \$6 million per year to \$63 million in 2010, \$69.2 million in 2012, and \$70.2 million in 2012. With exemptions from trip limits provided to each sector the discard rates experienced during FY 2007 and 2008 may not be realized. Assuming a 50% increase in TAC utilization results in estimated potential groundfish revenues of \$87.2 million in FY 2010, \$96.1 million in 2011, and \$97.4 million in 2012.

Allocating yellowtail flounder to the scallop fishery may limit fishing revenues, particularly in FY 2011 and 2012 when the scallop fishery will be subject to AMs if too much yellowtail flounder is caught. Allocating 90 percent of the expected yellowtail flounder catch in GB and SNE/MA may reduce scallop vessels revenues by \$35 to \$36 million for FY 2011 – FY 2012. This ranges from 6% to 7% of forecast scallop revenues. In FY 2010 there aren't expected to be any revenue changes realized by the scallop fishery since there is no specific allocation and no specific measures that limit overall scallop fishing if the yellowtail flounder allocation is exceeded. The Council may consider a measure in Scallop Amendment 15 that adjusts FY 2011 or FY 2012 allocations if the scallop fishery exceeds the amount estimated for FY 2010, but that measure has not yet been designed.

The Proposed Action included modifications to effort controls (GOM cod and pollock trip limits) that will affect any vessels that choose to fish in the common pool. Estimating economic impacts is difficult because sector rosters are not yet known. For the permits that are committed to the common pool as of September 1, 2009, the combination of Amendment 16 and FW 44 measures are expected to reduce total revenues by 20.6% (\$5.1 million), and groundfish revenues by 69%. Most of these reductions are due to the Amendment 16 changes in DAS and the application of the 24-hour clock. The pollock trip limit has few impacts since only 36 of the 279 permits with DAS landed any pollock in FY 2007, and only 8 landed amounts that exceed the proposed trip limit. The revised trip limits may also encourage more vessels to remain committed to sectors.

The Proposed Action also authorizes in-season changes to trip limits and DAS counting. These changes increase the uncertainty faced by common-pool fishermen as they attempt to create a business plan for each fishing year. These changes may also contribute to a derby fishery if fishermen decide to fish as much as possible prior to any change made in-season.

Social Impacts

The Proposed Action is not expected to have major social impacts. The specifications are most likely to change attitudes about management than any other social impact factor, but these changes are likely to be minimal since the specifications were anticipated by Amendment 16. The imposition of trip limits on several stocks is likely to increase regulatory discarding, but that measure is seen to have less social effects than the differential DAS counting alternative.

Cumulative Effects

The Proposed Action is expected to have beneficial effects for managed resources. Adopting fishery specifications and modifying effort controls should increase the likelihood of achieving mortality targets and lead to increased stock sizes. The measures are not expected to have substantial cumulative effects on non-target species, protected resources, or habitat (including essential fish habitat). While fishery specifications are not expected to have impacts on human communities when compared to the No Action alternative, modifying effort controls is expected to have negative impacts on communities. These changes reduce potential revenues for those permits that remain in the common pool and will also increase uncertainty over the regulations since changes can be made to trip limits and DAS counting at any time during the year.

Alternatives to the Proposed Action

For measure that is proposed, the Council considered the No Action alternative. Many other alternatives or options were considered for each element. These are briefly described below.

- *Yellowtail flounder allocation of 100% in FY 2010:* Under this alternative, the scallop fishery would have received an allocation of 90% of the yellowtail flounder that is projected to be necessary to fully harvest the scallop ACL in FY 2010 – 2012.
- *Differential DAS Counting:* This alternative would have imposed a 2:1 differential DAS counting area in the inshore Gulf of Maine.

Impacts of Alternatives to the Proposed Action

In most cases, the No Action alternatives would not have met current requirements of the M-S Act. Specific impacts are described in section 7.0. Only the most significant biological and economic impacts are highlighted below.

Biological Impacts

The biological impacts of the No Action alternatives are likely to be that mortality targets are exceeded for several stocks. Impacts of the 90% yellowtail flounder allocation in 2010 are similar to the Proposed Action. The differential DAS alternative would reduce fishing effort in the inshore Gulf of Maine by half, which would presumably reduce mortality, but precise effects are difficult to determine due to lack of information about sector membership.

Essential Fish Habitat Impacts

Overall, the indirect impacts of this No Action alternative are expected to be minor, and may be negative. The specification of ACLs is an administrative measure that is usually not expected to have direct impacts

on essential fish habitat. As the No Action alternative is defined, the ACLs would be set at the ABC level which would allow for slightly larger catches to be taken by the groundfish fishery. So indirectly, when compared to the Proposed Action, this option could lead to a very minor increase in fishing effort and increase the interactions of groundfish fishing gear with EFH in FY 2010.

The No Action alternative also does not specify a specific allocation of yellowtail flounder for the groundfish and scallop fisheries. When compared to the Proposed Action, this could lead to an increase in scallop fishing activity in FY 2011 and FY 2012 in the areas outside the CAI, CAII, and NLCA access areas, since fishing in these areas would still be limited by the cap. This might result in increased interactions between EFH and scallop dredge activity, but ultimately these interactions would be consistent with the analysis of impacts in the scallop management actions.

If U.S./Canada TACs are not specified, there may be changes in the distribution of fishing activity on GB. In recent years the TACs have occasionally restricted access to the Eastern U.S./Canada area; without the TACs, these restrictions would not be implemented and as a result there may be more fishing effort in the eastern area. It is not clear whether catch rates in the eastern area would be higher than in the western area, leading to more fish being caught with less effort.

The CAI Hook Gear Haddock SAP TACs would be the same under No Action as in the Proposed Action. This measure is largely administrative in nature and no impacts on EFH are anticipated.

Under this option, the effort control measures that are proposed in Amendment 16 would remain in effect and would not be changed. The impacts on EFH are described in that action. No changes would be expected.

An option considered adopting differential DAS at the rate of 2:1 for an area in the inshore GOM. Imposing this rate in the inshore GOM area may reduce effort in that area, but the effort could shift into other areas as a result. Overall, this measure may have provided minor, positive impacts for habitat in the inshore GOM area.

Impacts on Endangered and Other Protected Species

The specification of ACLs is an administrative measure that is usually not expected to have direct impacts on protected species. The No Action alternative also does not specify a specific allocation of yellowtail flounder for the groundfish and scallop fisheries. Without an overall cap on yellowtail flounder catches, scallop fishing activity would not be constrained by yellowtail flounder catches. When compared to the Proposed Action, this could lead to an increase in scallop fishing activity in FY 2011 and FY 2012 in the areas outside the CAI, CAII, and NLCA access areas. The impact may be therefore be slightly stronger and negative on both sea turtles, as they are most likely to interact with scallop dredges, but such an outcome is uncertain and unpredictable at this time.

If U.S./Canada TACs are not specified, there may be changes in the distribution of fishing activity on GB. The impact of the change in distribution on protected species, however, depends on the gear used and the time and area in which the fishery occurs relative to the presence/absence of protected species, which cannot be predicted with any certainty at this time.

The CAI Hook Gear Haddock SAP TACs would be the same under No Action as in the Proposed Action. This measure is largely administrative in nature and no impacts on protected species are anticipated.

This option differs slightly from the Proposed Action in that GB and SNE/MA yellowtail flounder allocated to the scallop fishery in FY 2010 is 90 percent of the amount expected to be caught, rather than 100 percent. Because this value does not trigger a specific AM in FY 2010 and is only marginally smaller

than that proposed, the protected species impacts of this option would be expected to be indistinguishable from those described for the Proposed Action.

Overall, the indirect impacts of this No Action alternative (for specifications) are expected to be minor, and may be slightly negative, although in all cases there is a high degree of uncertainty around the negative predictions.

This option proposed to adopt differential DAS counting at the rate of 2:1 for an area in the inshore GOM in order to reduce catches of GOM cod and pollock by vessels that do not join sectors. Overall the reductions in DAS reduce groundfish fishing and, by extension, the impact on protected species could be positive, as the chance of interaction with the fishery could decrease. There could be some drawbacks to this option, however. On one hand the effort could shift into other areas as a result of the option, more specifically out of the differential counting areas in the inshore GOM to elsewhere. A second factor limiting the potential benefits to protected species of this measure is that it only applies to vessels that choose to remain in the common pool; based on September 1, 2009 sector rosters, this is likely to be only a small number of active fishing vessels. Overall, this measure may or may not effect protected species in the inshore GOM area, depending how fishing behavior changes as a result; such changes at this time are unpredictable. The overall reduction does have the potential to be beneficial to protected species, however.

Economic Impacts

Allocating 90% of the yellowtail flounder necessary to the scallop fleet in 2010 would likely not have any economic effect, since there is no AM on the scallop fleet in 2010 so nothing restricts catch to the ACL. Differential DAS counting in the Gulf of Maine would be expected to decrease revenues over the No Action alternative, but its exact economic impacts would depend on sector membership during the fishing year.

Social Impacts

The No Action alternative for specifications, if adopted, would entail the failure by the Council to adopt ACLs for the fishery and, as a result, implementation of ACLs by NMFS, as well as a lack of TACs for the U.S./Canada area and no special allocation of yellowtail flounder to the scallop fishery. The social impacts caused by the implementation of Amendment 16 would not be changed.

Under the No Action alternative, the effort control measures adopted by Amendment 16 would apply to common-pool groundfish fishing vessels – that is, those that do not join a sector. These measures were evaluated in Amendment 16 to determine the social impacts. No Action could lead more people to be in the common pool in comparison with the other alternatives. Since sectors were projected to have primarily positive social impacts, especially in the long-term, it can be assumed that the No Action alternative will lead to fewer long-term positive impacts.

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2.4 List of Acronyms

ACE	Annual Catch Entitlement
ALWTRP	Atlantic Large Whale Take Reduction Plan
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
CAI	Closed Area I
CAII	Closed Area II
CASA	Catch at Size Analysis (scallop assessment model)
CC	Cape Cod
CPUE	catch per unit of effort
DAM	Dynamic Area Management
DAS	days-at-sea
DFO	Department of Fisheries and Oceans (Canada)
DMF	Division of Marine Fisheries (Massachusetts)
DMR	Department of Marine Resources (Maine)
DSEIS	Draft Supplemental Environmental Impact Statement
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ETA	Elephant Trunk Area
F	Fishing mortality rate
FAAS	Flexible Area Action System
FEIS	Final Environmental Impact Statement
FMP	fishery management plan
FSCS	Fisheries Scientific Computer System
FW	framework
FY	fishing year
GAMS	General Algebraic Modeling System
GB	Georges Bank
GIS	Geographic Information System
GOM	Gulf of Maine
GRT	gross registered tons/tonnage
HAPC	habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
I/O	input/output
IFQ	individual fishing quota
ITQ	individual transferable quota
IVR	interactive voice response reporting system
IWC	International Whaling Commission

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List of Acronyms

LOA	letter of authorization
LPUE	landings per unit of effort
MA	Mid-Atlantic
MAFAC	Marine Fisheries Advisory Committee
MAFMC	Mid-Atlantic Fishery Management Council
MARFIN	Marine Fisheries Initiative
MEY	maximum economic yield
MMC	Multispecies Monitoring Committee
MMPA	Marine Mammal Protection Act
MPA	marine protected area
MRFSS	Marine Recreational Fishery Statistics Survey
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSMC	Multispecies Monitoring Committee
MSY	maximum sustainable yield
NAA	No Action Alternative
NAPA	National Academy of Public Administration
NAS	National Academy of Sciences
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NERO	Northeast Regional Office
NFMA	Northern Fishery Management Area (monkfish)
NLCA	Nantucket Lightship closed area
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NSTC	Northern Shrimp Technical Committee
NT	net tonnage
NWA	Northwest Atlantic
OBDBS	Observer database system
OLE	Office for Law Enforcement (NMFS)
OY	optimum yield
PBR	Potential Biological Removal
PSC	Potential Sector Contribution
PDT	Plan Development Team
PRA	Paperwork Reduction Act
PREE	Preliminary Regulatory Economic Evaluation
RFA	Regulatory Flexibility Act
RMA	Regulated Mesh Area
RPA	Reasonable and Prudent Alternatives
SA	Statistical Area
SAFE	Stock Assessment and Fishery Evaluation
SAP	Special Access Program

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List of Acronyms

SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SBNMS	Stellwagen Bank National Marine Sanctuary
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SFMA	Southern Fishery Management Area (monkfish)
SIA	Social Impact Assessment
SNE	southern New England
SNE/MA	southern New England-Mid-Atlantic
SSB	spawning stock biomass
SSC	Social Science Committee
TAC	total allowable catch
TED	turtle excluder device
TEWG	Turtle Expert Working Group
TMGC	Trans-boundary Management Guidance Committee
TMS	ten minute square
TRAC	Trans-boundary Resources Assessment Committee
TSB	total stock biomass
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VMS	vessel monitoring system
VPA	virtual population analysis
VTR	vessel trip report
WGOM	Western Gulf of Maine
WO	weighout
YPR	yield per recruit

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List of Acronyms

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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. The most recent amendment, published as Amendment 16, was submitted to the National Marine Fisheries Service in October, 2009 and will become effective on May 1, 2010. This amendment adopted a broad suite of management measures in order to achieve fishing mortality targets necessary to rebuild overfished stocks and meet other requirements of the M-S Act.

Amendment 16 adopted a process for setting Annual Catch Limits that requires catch levels to be set in biennial specifications packages. This framework is intended to adopt such specifications for regulated Northeast multispecies stocks, as well as stocks managed by the U.S./Canada Resource Sharing Agreement. It is also being used to incorporate the best available information in order to evaluate effort control measures adopted in Amendment 16.

3.2 Purpose and Need for the Action

The Northeast Multispecies FMP requires that the NMFS Regional Administrator, after consultation with the Council, determine the specifications for the groundfish fishery. The FMP requires the Council and the Regional Administrator to review the best available information regarding the status of the resource and fishery and develop appropriate fishery specifications. Amendment 16 allows for three-year specifications, as proposed in this document.

Previous amendments to the FMP established processes to evaluate fishing mortality and rebuilding progress. If necessary as a result of these evaluations, periodic framework adjustments were planned to facilitate any changes to the management program that may prove necessary in order to comply with the rebuilding programs and to provide an opportunity to adjust other management measures as necessary.

The proposed adjustments address two **needs**: to set specifications for ACLs in Fishing Years 2010-2012, and to modify management measures in order to ensure that overfishing does not occur. One **purpose** of this framework adjustment is to establish specifications for the Northeast multispecies fishery during the 2010-2012 fishing years. The other **purpose** is to adopt modifications to common pool effort control measures implemented by Amendment 16 so that the benefits from those measures are realized, and to facilitate the achievement of mortality and rebuilding targets in the fishery.

The specifications and adjustments to Amendment 16 are intended to meet the goal and many of the objectives of the Northeast Multispecies FMP, as modified in Amendment 16, specifically:

<i>Need</i>	<i>Purpose</i>
Set specifications for ACLs in Fishing Years 2010-2012 consistent with the ABC control rules adopted in Amendment 16 to the Northeast Multispecies FMP	<ul style="list-style-type: none">• Measures to adopt ACLs, including 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, the National Standard guidelines, and the requirements of the MSA of 2006	<ul style="list-style-type: none">• Implement changes to trip limits for common pool vessels• Implement changes to differential DAS counting for common pool vessels• Enhance the RA's authority to modify effort control measures in-season to reduce the likelihood of exceeding ACLs
Minimize, to the extent practicable, the adverse effects of fishing on essential fish habitat to comply with section 303(a)(7) of the Magnuson-Stevens Act	<ul style="list-style-type: none">• Identify other actions to encourage the conservation and enhancement of EFH.

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. Since 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. A more detailed description of the history of the FMP is included in Amendment 16.

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 is a combined framework adjustment to a fishery management plan and an environmental assessment (EA). An EA provides an analysis of a Proposed Action, the alternatives to that action that were considered, and the impacts of the action and the alternatives. An EA is prepared rather than an Environmental Impact Statement (EIS) when the environmental impacts are not expected to be significant. The required NEPA elements for an EA are discussed in section 7.2.1. The evaluation that this action will not have significant impacts is in section 7.2.2, and the required Finding of No Significant Impact (FONSI) statement is included at the end of that section.

3.5 Possible Changes to Yellowtail Flounder Annual Catch Limits

The Council approved FW 44 for submission on November 18, 2009. As described in the Proposed Action (section 3.1.1.1), FW 44 includes an allocation of GB and SNE/MA yellowtail flounder to the scallop fishery that is based on the amount of yellowtail flounder that fishery is expected to harvest under a specified scallop management program. This allocation was based on the scallop management program adopted that same day for Framework Adjustment 21 to the Atlantic Sea Scallop Fishery Management Plan.

Subsequent to those decisions, the Council scheduled a January 27, 2010 review and possible reconsideration of Scallop Framework 21 measures. The outcomes of this review are uncertain. If the Council changes the scallop management action, it may also revise the allocations of GB and SNE/MA yellowtail flounder to the scallop fishery. Even if the allocations are not changed, a modification of the scallop management program could change the impacts of the yellowtail flounder allocations so that they are different than described in this document. Once the Council's decision is known, FW 44 and its EA will be evaluated to determine if supplementary information is needed to reflect any changes to scallop management that may be made.

If a change is made to the scallop management program, broadly speaking there are two choices for the yellowtail flounder allocation between the two fisheries. Either the amount (metric tons) of yellowtail flounder allocated to the scallop fishery could remain the same, or the amount could change. It seems unlikely that the amount allocated would be reduced, so any change is more likely to reflect an increase of yellowtail flounder to the scallop fishery and a decrease for the groundfish fishery. Table 1 provides a qualitative overview of the relative impacts of these choices. It should be noted the comparisons are to the impacts estimated in FW 44 in order to reflect how a different scallop management program would lead to different impacts.

INTRODUCTION AND BACKGROUND

Possible Changes to Yellowtail Flounder Annual Catch Limits

Table 1 – Qualitative summary of possible impacts of a change in the allocation of yellowtail flounder to the scallop and groundfish fisheries as a result of a change in the scallop management program

Management Measure		VECs				
		Managed Groundfish Resources	Non-target Species	Protected Resources	Habitat Including EFH	Human Communities
INCREASED SCALLOP HARVEST	YELLOWTAIL FLOUNDER ALLOCATION (WEIGHT) TO THE SCALLOP FISHERY REMAINS THE SAME	Negative (2010) – Increases risk GB and SNE/MA YTF may be exceeded since scallop fishery catches of YTF not controlled directly by AM Neutral (2011 and 2012) – AMs on both scallop and groundfish fisheries should control catch to ACL	Neutral (2010) Positive (2011 and 2012) – May reduce catches of scallops, other species caught by scallop vessels if allocation restricts scallop fishery	Mixed/Positive – May marginally reduce scallop dredge effort (compared to FW 44) if yellowtail flounder allocation restricts fishery	No Impact/Neutral – provided rebuilding continues, additional impacts to habitat are not anticipated	Mixed – No impact on groundfish fishery, but may constrain scallop catches and reduce scallop revenues in 2011 and 2012
	YELLOWTAIL FLOUNDER ALLOCATION (WEIGHT) TO THE SCALLOP FISHERY INCREASES	Neutral (as compared to FW 44 impacts) – Total groundfish catch does not change and if increase matches additional amount scallop fishery is expected to catch in 2010, less likelihood ACLs will be exceeded	Neutral (as compared to FW 44 impacts)	Neutral (compared to FW 44)	Neutral (compared to FW 44)	Mixed – An Increase reduces the likelihood that scallop fishery will be constrained, but reduces YTF available for groundfish fishery

INTRODUCTION AND BACKGROUND

Possible Changes to Yellowtail Flounder Annual Catch Limits

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4.0 PROPOSED ACTION

4.1 Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

4.1.1 Option Two – Fishery Specifications and ACLs for 2010-2012

Consistent with the process established by Amendment 16, and the ABC control rules adopted by that action, this action proposes the Acceptable Biological Catch (ABC) and Annual Catch Limits (ACLs) for FY 2010 – FY 2012. These ACLs will be the basis for determining whether Accountability Measures (AMs) are triggered as described in Amendment 16. As a result of the adoption of these ACLs, the incidental catch TACs that are applicable to the Category B (regular) DAS Program and certain Special Access Programs are also defined.

The ABCs and ACLs proposed for FY 2010- 2012 are shown in Table 2. This table includes the Overfishing Limits (OFLs) for each stock. The ABCs are those recommended by the Science and Statistical Committee (SSC) (see Appendix I). The PDT guidance for calculating ACLs is attached as Appendix II, while the ABC and ACL calculations are detailed in Appendix III. The incidental catch TACs for the same period are shown in Table 3.

The general approach for calculating these values begins with the ABCs set by the SSC (Appendix I). The ABC is distributed among the various components of the fishery as described in Amendment 16 and Appendices II and III. Each ABC is then adjusted for management uncertainty, where appropriate, using the adjustments approved by the Council, as shown in Appendix III.

These ACLs and incidental catch TACs are based on the composition of sector rosters as of September 1, 2009. The share of each stock that is available to sector and common pool vessels may differ from that shown should sector membership be revised. Once NMFS knows the final sector rosters, the ACLs applicable to each commercial component will be revised. This will also result in changes to the incidental catch TACs.

The FY 2011 – FY 2012 ACLs for GB cod, GB haddock, and GB yellowtail flounder may be modified as a result of future decisions of the Transboundary Management Guidance Committee (TMGC). Allocation of these stocks under the terms of the U.S./Canada Resource Sharing Understanding will affect the amount available for U.S. fishermen. For GB yellowtail flounder, the 2011 and 2012 values assume the U.S. and Canadian shares as would have resulted from the Understanding in (U.S.: 64 percent, Canada 36 percent) as in 2010. Because the allocations for EGB cod and haddock for FY 2011 and FY 2012 are unknown, and these management units are assessed each year separate from the remainder of the stock, the values shown in Table 2 are the maximum possible U.S. ABC/ACL and do not reflect any Canadian catch. A sense of the amount that may be allocated in 2011 and 2012 can be gained from the 2010 allocations: in 2010, the Canadian EGB cod TAC is 1,012 mt and the EGB haddock TAC is 17,612 mt.

Framework 42 adopted a mechanism for adjusting the TAC for the CAI Hook Gear Haddock SAP based on the relative difference between exploitable biomass in 2004 and the projected

PROPOSED ACTION

Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

exploitable biomass for a given year. The formula is independent of the ACL specifications set in this section. The formula defined in FW 42 is:

$$TAC_{yr} = 1,130 \text{ mt live weight} \times (\text{Projected WGB Haddock Exploitable Biomass}_{yr} / \text{WGB Haddock Exploitable Biomass}_{2004})$$

The framework further defines that the western component of GB haddock will be estimated as 35 percent of the size of the total GB haddock stock unless an assessment that identifies and assesses this component. Using projections based on GARM III, the TACs for FY 2010 – FY 2012 are shown in Table 4. Note that the 2004 biomass value has been updated to reflect GARM III assessment results. For 2004, three-year (2002-2004) average partial recruitment and mean weights were used when calculating exploitable biomass as recommended by GARM II, while for FY 2010 - 2012 the five year average (2003-2007) was used in the projection as recommended by GARM III.

With respect to the TAC for the CAI Hook Gear Haddock SAP, the Proposed Action and the No Action alternative are the same. This action does not consider changing the formula adopted by FW 42, but just presents the results of applying that formula to projected stock size. It is included here to facilitate preparation of the EA for all specifications for this fishery.

Rationale: Amendment 16 described the process for establishing ACLs for the Multispecies FMP, a required element of all FMPs (see 16 U.S.C. 1853(a)(15): any fishery management plan shall "...establish a mechanism for specifying annual catch limits...at a level such that overfishing does not occur in the fishery..."). The amendment also adopted the ABC control rules recommended by the SSC, as recommended by the advisory guidelines for implementing the National Standards, 50 C.F.R. 600.310(f)(4). Using the process established by Amendment 16, this action sets the ABCs for FY 2010 - FY 2012 consistent with the ABC control rules that were adopted. Absent additional scientific information, it would not be consistent with the purpose of this action to consider ABCs that differ from the control rules adopted by that action. The ABCs have been set at a level such that a catch equal to the ABC is unlikely to result in overfishing (see section 6.1.1.1 for this analysis). This action also proposes the ACLs for FY 2010 – FY 2012. The development of these ACLs is detailed in the appendices. As noted in the M-S Act, the purpose of the ACLs is to ensure overfishing does not occur. In all cases the ACL is lower than the ABC, which means the risk of overfishing is even less at this catch than if the catch equals the ABC.

As noted in Amendment 16, it is expected that the ABCs and ACLs for FY 2012 – FY 2014 will be calculated and adopted before the FY 2012 ACL in this action is used.

The FY 2012 values here are specified in case there is a future delay in updating the ACLs.

The CAI Hook Gear Haddock SAP TACs are provided here for clarity; these are set based on regulations implementing FW 42. No changes were considered and the No Action alternative is identical.

PROPOSED ACTION

Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Table 2 – Northeast Multispecies OFLs, ABCs, ACLs, and other ACL sub-components for FY 2010 – FY 2012 (metric tons, live weight). Values are rounded to the nearest metric ton.

(1) YTF allocations for scallops are an other sub-component in FY 2010, but are expected to be sub-ACLs in FY 2011- 2012

(2) Grayed out values may be adjusted as a result of future recommendations of the TMGC. Values shown for GB haddock and cod in 2011 and 2012 are maximum possible and do not include any Canadian catch.

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops (1)	Groundfish Sub-ACL	Comm Groundfish Sub-ACL	Rec Groundfish Sub-ACL	Preliminary Sectors Sub-ACL	Preliminary Non_Sector Groundfish Sub-ACL	MWT Sub-ACL	Total ACL
GB Cod ⁽²⁾	2010	6,272	3,800	38	152	0	3,430			3,256	174	0	3,620
	2011	7,311	5,616	56	225	0	5,068			4,812	257	0	5,349
	2012	8,090	6,214	62	249	0	5,608			5,324	284	0	5,919
GOM Cod	2010	11,089	8,530	566	283	0		4,567	2,673	4,230	337	0	8,088
	2011	11,715	9,012	597	299	0		4,825	2,824	4,469	356	0	8,545
	2012	11,742	9,018	598	299	0		4,828	2,826	4,472	356	0	8,551
GB Haddock ⁽²⁾	2010	80,007	44,903	449	1,796	0	40,440			39,313	1,127	84	42,768
	2011	59,948	46,784	468	1,871	0	42,134			40,959	1,174	87	44,560
	2012	51,150	39,846	398	1,594	0	35,885			34,885	1,000	74	37,952
GOM Haddock	2010	1,617	1,265	9	37	0		825	324	786	39	2	1,197
	2011	1,536	1,206	9	35	0		787	308	749	37	2	1,141
	2012	1,296	1,013	7	29	0		661	259	630	31	2	959
GB Yellowtail Flounder ⁽²⁾	2010	5,148	1,200	0	60	110	999		0	934	65	0	1,169
	2011	6,083	1,081	0	54	197	799		0	747	52	0	1,050
	2012	7,094	1,226	0	61	308	822		0	769	53	0	1,191
SNE/MA Yellowtail Flounder	2010	1,553	493	5	20	111	332		0	241	91	0	468
	2011	2,174	687	7	27	80	527		0	383	144	0	641
	2012	3,166	1,003	10	40	126	760		0	552	208	0	936
CC/GOM Yellowtail Flounder	2010	1,124	863	9	35	0	779			727	52	0	822
	2011	1,355	1,041	10	42	0	940			876	63	0	992
	2012	1,508	1,159	12	46	0	1,046			976	70	0	1,104
Plaice	2010	4,110	3,156	32	126	0	2,848			2,665	184	0	3,006
	2011	4,483	3,444	34	138	0	3,108			2,908	200	0	3,280
	2012	4,727	3,632	36	145	0	3,278			3,067	211	0	3,459

PROPOSED ACTION
Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops (1)	Groundfish Sub-ACL	Comm Groundfish Sub-ACL	Rec Groundfish Sub-ACL	Preliminary Sectors Sub-ACL	Preliminary Non_Sector Groundfish Sub-ACL	MWT Sub_ACL	Total ACL
Witch Flounder	2010	1,239	944	9	38	0	852			810	42	0	899
	2011	1,792	1,369	14	55	0	1,236			1,174	61	0	1,304
	2012	2,141	1,639	16	66	0	1,479			1,406	73	0	1,561
GB Winter Flounder	2010	2,660	2,052	0	103	0	1,852			1,797	55	0	1,955
	2011	2,886	2,224	0	111	0	2,007			1,948	60	0	2,118
	2012	3,297	2,543	0	127	0	2,295			2,227	68	0	2,422
GOM Winter Flounder	2010	441	238	60	12	0	158			132	26	0	230
	2011	570	238	60	12	0	158			132	26	0	230
	2012	685	238	60	12	0	158			132	26	0	230
SNE/MA Winter Flounder	2010	1,568	644	53	32	0	520			0	520	0	605
	2011	2,117	897	72	45	0	726			0	726	0	842
	2012	2,830	1,198	96	60	0	969			0	969	0	1,125
Redfish	2010	9,899	7,586	76	303	0	6,846			6,613	234	0	7,226
	2011	10,903	8,356	84	334	0	7,541			7,284	257	0	7,959
	2012	12,036	9,224	92	369	0	8,325			8,041	284	0	8,786
White Hake	2010	4,130	2,832	28	113	0	2,556			2,435	121	0	2,697
	2011	4,805	3,295	33	132	0	2,974			2,833	141	0	3,138
	2012	5,306	3,638	36	146	0	3,283			3,128	156	0	3,465
Pollock	2010	5,085	3,293	200	200	0	2,748			2,630	118	0	3,148
	2011	5,085	3,293	200	200	0	2,748			2,630	118	0	3,148
	2012	5,085	3,293	200	200	0	2,748			2,630	118	0	3,148
N. Window-pane Flounder	2010	225	169	2	49	0	110			0	110	0	161
	2011	225	169	2	49	0	110			0	110	0	161
	2012	225	169	2	49	0	110			0	110	0	161

PROPOSED ACTION
Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Stock	Year	OFL	U.S. ABC	State Waters Sub-component	Other Sub-Components	Scallops (1)	Groundfish Sub-ACL	Comm Groundfish Sub-ACL	Rec Groundfish Sub-ACL	Preliminary Sectors Sub-ACL	Preliminary Non_Sector Groundfish Sub-ACL	MWT Sub_ACL	Total ACL
S. Window-pane Flounder	2010	317	237	2	69	0	154			0	154	0	225
	2011	317	237	2	69	0	154			0	154	0	225
	2012	317	237	2	69	0	154			0	154	0	225
Ocean Pout	2010	361	271	3	11	0	239			0	239	0	253
	2011	361	271	3	11	0	239			0	239	0	253
	2012	361	271	3	11	0	239			0	239	0	253
Atlantic Halibut	2010	119	71	36	4	0	30			0	30	0	69
	2011	130	78	39	4	0	33			0	33	0	76
	2012	143	85	43	4	0	36			0	36	0	83
Atlantic Wolffish	2010	92	83	1	3	0	73			0	73	0	77
	2011	92	83	1	3	0	73			0	73	0	77
	2012	92	83	1	3	0	73			0	73	0	77

PROPOSED ACTION

Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Table 3 – Preliminary incidental catch TACs for Special Management Programs (metric tons, live weight). These values may change as a result of changes in sector membership.

Stock	Cat B (regular) DAS Program			CAI Hook Gear Haddock SAP			EUS/CA Haddock SAP		
	2010	2011	2012	2010	2011	2012	2010	2011	2012
GB cod	1.7	2.6	2.8	0.6	0.8	0.9	1.2	1.7	1.9
GOM cod	3.4	3.6	3.6						
GB Yellowtail	0.6	0.5	0.5				0.6	0.5	0.5
CC/GOM yellowtail	0.5	0.6	0.7						
SNE/MA Yellowtail	0.9	1.4	2.1						
Plaice	9.2	10.0	10.6						
Witch Flounder	2.1	3.1	3.7						
White Hake	5.2	7.3	9.7						
SNE/MA Winter Flounder	1.1	1.2	1.4						
GB Winter Flounder	1.2	1.4	1.6				1.2	1.4	1.6
Pollock	1.2	1.2	1.2	0.4	0.4	0.4	0.8	0.8	0.8

Table 4 – Proposed CAI Hook Gear Haddock SAP TACs, FY 2010- 2012

Year	Exploitable Biomass (thousand mt)	WGB Exploitable Biomass	B(year)/B2004	TAC (mt, live weight)
2004	78,037	27,313		
2010	291,682	102,089	3.738	4,223.7
2011	218,054	76,319	2.794	3,157.5
2012	177,978	62,292	2.281	2,577.2

4.1.1.1 Yellowtail Flounder Allocations for the Scallop Fishery

Amendment 16 adopts ACLs for groundfish stocks. Some of these ACLs are divided into either sub-ACLs that are subject to accountability measures (AMs), or other sub-components that are not subject to AMs. The amendment proposes that a portion of yellowtail flounder will be allocated to the scallop fishery. In FY 2010, the allocation is considered a sub-component, while in FY 2011 and beyond it will be considered a sub-ACL subject to AMs that will be adopted in Scallop Amendment 15. The values for FY 2011 and FY 2012 may be revised in the future based on updated scallop and yellowtail flounder stock information, TMGC recommendations, and on future scallop fishery access area measures.

An estimate of the yellowtail flounder that will be caught by the scallop fishery in FY 2010 – FY 2012 if it harvests its projected yield was developed for four scallop management scenarios. In FY 2010, the scallop fishery will be assumed to catch 100 percent of the GB and SNE/MA yellowtail flounder projected to be caught if the scallop yield is harvested. In FY 2011 and FY 2012, the GB and SNE/MA yellowtail flounder that will be allocated to the fishery in those years is 90 percent of this amount. For CC/GOM yellowtail flounder, scallop fishery incidental catches are low enough that they will be considered part of the “other sub-component”. These catches will be monitored but a specific allocation will not be made in this action. An allocation may be made in the future.

Allocations are adjusted for management uncertainty when the allocation becomes a sub-ACL (in FY 2011 and beyond). As explained in Appendix III, for GB and CC/GOM yellowtail flounder (if/when specified) the sub-ACL will be set at 97 percent of the allocation, while for SNE/MA yellowtail flounder it will be set at 93 percent of the allocation.

The resulting values are shown in Table 5 for the scallop management scenario proposed in Scallop Framework Adjustment 21.

See section 2.9 for a discussion of possible changes to this allocation.

Rationale: This alternative recognizes the importance of yellowtail flounder to the prosecution of the scallop fishery and allocates most of the yellowtail flounder that the fishery is expected to catch if it harvests the available scallop yield. It also creates an incentive for scallop fishermen to reduce bycatch of yellowtail flounder in order to maximize scallop yield. With respect to Cape Cod/Gulf of Maine yellowtail flounder, no allocation is made since the incidental catch is a low percentage of the available catch and can be accommodated by the “other sub-components” category. An allocation of this stock may be made in the future.

PROPOSED ACTION

Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Table 5 – Proposed allocation of yellowtail flounder to the scallop fishery. Values are metric tons, live weight, rounded to the nearest metric ton.
(1) This value is considered an “other sub-component) in FY 2010 and is not a sub-ACL.

No Closure F = 0.20	Total Expected to be Caught, YTF Stock Area			Scallop Fishery ABC			Sub-ACL			
	Year	CC	GB	SNEMA	CC	GB	SNEMA	CC	GB	SNEMA
	2010	30	110	111		110	111		110 ⁽¹⁾	111 ⁽¹⁾
	2011	26	226	96		203	86		197	80
	2012	32	353	151		318	136		308	126

4.1.1.2 Sub-option Two – U.S./Canada Resource Sharing Understanding TACs

This alternative specifies hard TACs for the U.S./Canada Management Area for FY 2010 (May 1, 2010 – April 30, 2011) as indicated in Table 6 below. These TACs would be in effect for the remainder of the fishing year, unless NMFS determines that the catch of GB cod, haddock, or yellowtail flounder from the U.S./Canada Management Area in FY 2009 exceeded the pertinent 2009 TAC. The Understanding and the regulations require that if a TAC is exceeded in a particular fishing year, then the TAC for the subsequent fishing year is reduced by the amount of the overage (TAC adjustment). In order to minimize any disruption of the fishing industry, NMFS would attempt to make any necessary TAC adjustments in the first quarter of the fishing year.

Table 6 – Proposed FY 2010 U.S./Canada TACs (mt) and Percentage Shares

	Eastern GB Cod	Eastern GB Haddock	GB Yellowtail Flounder
Total Shared TAC	1,350	29,600	1,500
U.S. TAC	338 (25%)	11,988 (40.5%)	1,200
Canada TAC	1,012 (75%)	17,612 (59.5%)	pending

These proposed TACs are based on the TRAC's guidance to the TMGC (TRAC Status Report 2009/01, 2009/02, and 2009/03; June 2009), and the TMGC's recommendations (TMGC Meeting of September 15, 16, 2009). The above GB yellowtail flounder TAC has not been adjusted downward to reflect management uncertainty or any allocation to the scallop fishery.

With respect to GB yellowtail flounder, the proposed U.S. TAC is based upon the recommendation of the Science and Statistical Committee recommendation for the ABC. The SSC made its recommendation at its August, 2009 meeting, based upon the 2009 TRAC Status Report, and the proposal that the U.S. delegates presented to the TMGC was consistent with the advice of the SSC (1,500 mt). In contrast, the Canadian delegation stated that they proposed 2,700 mt in order to be within the range of TRAC advice and to be consistent with the TMGC strategy, as well as to support the Understanding. It was noted that this level was close to a rebuilding fishing mortality of 0.107. The U.S. delegation explained to the Canadians that they proposed 1,500 mt because they are constrained to this level due the U.S. law and the Fishery Management Plan (FMP) rebuilding requirement. They noted that this shared catch would result in a 19% increase in amount of yellowtail for Canada in 2010.

The Canadian point of view was that since biomass is relatively high and F is low, there is not justification to be reducing the catch further. Even though recruitment has been inconsistent, there are positive indicators of stock performance. In contrast, the U.S. point of view was that the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the FMP require the stock to rebuild by 2014 and require use of the most recent scientific information, and that the laws provide no flexibility at this time (unless the MSA is modified).

The Canadian delegation suggested that an avenue to obtain flexibility may be either to refrain from revising the calculation of F_{rebuild} annually, or to modify the FMP to adopt a lower probability of rebuilding than the currently adopted 75% probability. The U.S. delegates concluded that these ideas, although logical, could not be pursued at this time, given the restrictions of the MSA, the FMP, and the Council process.

PROPOSED ACTION
Commercial Fishery Effort Control Modification

Because the TMGC could not come to a consensus on an appropriate shared catch for GB yellowtail, they acknowledged this impasse and agreed to disagree. The Council voted on September 23, 2009 to adopt the recommendation of the TMGC for Eastern GB cod and Eastern GB haddock. The Council adopted a U.S. GB yellowtail flounder TAC of 1,200 mt, which was determined based on the SSC recommendation of 1,500 mt for a shared TAC, minus 300 mt for an assumed Canadian catch. 300 mt is slightly greater than the average Canadian catch of GB yellowtail flounder for 2008, 2007, and 2006, according to Canadian information presented to the TMGC (151, 132, and 590 mt, respectively).

The size of the Proposed 2010 TACs relative to the 2009 TACs is shown in Table 7.

Table 7 – Comparison of Proposed FY 2010 U.S./Canada TACs with FY 2009 TACs

Stock	FY 2009 (mt)	FY 2010 (mt)	Percent Change
Eastern GB cod	527	338	- 36 %
Eastern GB haddock	11,100	11,988	+ 8 %
GB yellowtail	1,617	* 1,200	- 32 %

* does not reflect management uncertainty adjustment or allocation to scallop fishery

The changes in the TACs reflect both changes to the percentage shares for the U.S., pursuant to the U.S./Canada Understanding (increase for haddock and decreases for cod and yellowtail), as well as stock status, and the TMGC recommendations. The weighting formula used to determine the percentage shares was 90/10 (resource distribution/historic utilization). More information on the calculation of the percentage shares may be accessed through the TMGC web site at the following address:

<http://www.mar.dfo-mpo.gc.ca/science/tmgc/background/share.pdf>.

4.2 Commercial Fishery Effort Control Modification

4.2.1 Option Two – Modification of Trip Limits

The trip limit for GOM cod at the beginning of FY 2010 will be 800 lbs. per DAS and 4,000 lbs. per trip. The initial trip limit for GOM pollock will be 1,000 lbs. per DAS, up to 10,000 lbs. per trip. For cod, Handgear A permits will have a trip limit of 300 lbs., while Handgear B permits will be limited to 75 lbs. per trip. Also, since Option 4 of this section is also adopted, these numbers will apply at the start of the fishing year and may be changed by the RA during the year. For limited access scallop fishery vessels, there will be no trip limit for yellowtail flounder and limited access scallop vessels will be required to land all legal-sized yellowtail flounder that is caught. Groundfish vessels will still have yellowtail flounder trip limits as implemented in Amendment 16.

Rationale: The sub-ACL for the common pool is projected to be low in FY 2010 based upon current sector membership. If it is likely that the ACL may be rapidly exceeded, a derby fishery is likely to occur. Trip limits will be set somewhat conservatively at the start of the season in order to account for uncertainty over sector membership and common pool fishing practices. The trip limits for these stocks are set at the same level as in FY 2009 to ease the transition to the new management measures and so that discards are not increased from existing levels. This action does not change the automatic adjustment to Handgear A and B trip limits that was adopted by Amendment 13; these trip limits change in proportion to changes in trip limits for DAS vessels.

4.2.2 Option Four – Effort Control Measure Adjustments

The Regional Administrator has the authority and responsibility to monitor the catch of multispecies stocks in relationship to the ACLs and is authorized to modify certain effort control measures for common pool vessels as appropriate consistent with procedures established by the Administrative Procedures Act (APA). Effort control measures that may be modified in this manner include possession limits and DAS counting rates. Measures can be adjusted at any time during the fishing year to facilitate harvesting ACLs or to reduce the likelihood that ACLs of allocated multispecies stocks in all areas will be exceeded.

If time permits, the Council may provide advice to the Regional Administrator on the administration of this provision.

Rationale: Under existing regulations, in-season adjustments generally cannot be made to the measures for the common pool. There are limited exceptions, such as measures that can be adjusted to implement the U.S./Canada Resource Sharing Understanding, and beginning in FY 2012 if an ACL is projected to be reached under the hard TAC accountability measure. By this action, the RA is provided authority and guidance to adjust effort control measures. This action allows the Regional Administrator to adjust measures as necessary, and provides more flexibility to change measures at any time if necessary to harvest the ACL or to avoid exceeding the ACL.

PROPOSED ACTION
Commercial Fishery Effort Control Modification

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5.0 ALTERNATIVES TO THE PROPOSED ACTION

5.1 Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

5.1.1 Option One – No Action

Under this alternative, no action would be taken by the Council to implement specifications for FY 2010. It is important to note that failure to take action would violate several provisions of the Magnuson Stevens Act, and hence this alternative is not allowable by law.

The M-S Act requires that an ACL be imposed on stocks that are subject to overfishing by FY 2010, and that an ACL be adopted for remaining stocks in 2011. Because of that requirement, it is reasonable to assume that NMFS would act to impose ACLs as quickly as possible in the absence of Council action although it is difficult to predict what those ACLs would be. At a minimum NMFS would be expected to adopt ACLs for all multispecies stocks for FY 2010 except halibut, pout, plaice, redfish, GOM haddock, and GB haddock since those stocks are not subject to overfishing. The MSA requires that ACLs be set at a level equal to or lesser than the ABC recommended by the SSC. For the purposes of the No Action alternative, the best assumption is that the ABCs (Table 8) will be used as ACLs for overfished stocks.

Under the No Action alternative, NMFS would be expected to set the CAI Hook Gear Haddock SAP TACs shown in Table 4. The process for establishing these TACs was adopted in FW 42 and was not changed by Amendment 16.

Under the No Action alternative, the ACL will be distributed between sectors, the common pool, and other subcomponents of the fishery as described in Amendment 16. However, there will be no separate allocation of yellowtail flounder to the scallop fishery. Any yellowtail caught by the scallop fishery would fall under the “other subcomponents” category of the ACL.

If no action is taken on specifications, the recommendations of the TMGC will also not be implemented and there will be no TAC for GB cod, haddock, or yellowtail flounder in the U.S./Canada area for FY 2010. Vessels would still be constrained by the other regulations of the FMP, including days-at-sea (DAS), sector regulations, and closed areas.

ALTERNATIVES TO THE PROPOSED ACTION
 Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Table 8 – ABCs and OFLs for multispecies stocks that are subject to overfishing

Stock	Year	OFL	U.S. ABC
GB Cod	2010	6,272	3,800
	2011	7,311	5,616
	2012	8,090	6,214
GOM Cod	2010	11,089	8,530
	2011	11,715	9,012
	2012	11,742	9,018
GB Yellowtail Flounder	2010	5,148	1,200
	2011	6,083	1,081
	2012	7,094	1,226
SNE/MA Yellowtail Flounder	2010	1,553	493
	2011	2,174	687
	2012	3,166	1,003
CC/GOM Yellowtail Flounder	2010	1,124	863
	2011	4,483	1,041
	2012	4,727	1,159
Witch Flounder	2010	1,239	944
	2011	1,792	1,369
	2012	2,141	1,639
GB Winter Flounder	2010	2,660	2,052
	2011	2,886	2,224
	2012	3,297	2,543
GOM Winter Flounder	2010	441	238
	2011	570	238
	2012	685	238
SNE/MA Winter Flounder	2010	1,568	644
	2011	2,117	897
	2012	2,830	1,198
White Hake	2010	4,130	2,832
	2011	4,805	3,295
	2012	5,306	3,638
Pollock	2010	5,085	3,293
	2011	5,085	3,293
	2012	5,085	3,293
N. Window-pane Flounder	2010	225	169
	2011	225	169
	2012	225	169
S. Window-pane Flounder	2010	317	237
	2011	317	237
	2012	317	237
Atlantic Wolffish	2010	92	83
	2011	92	83
	2012	92	83

5.1.1.1 Sub-option One –Yellowtail Flounder Allocations for the Scallop Fishery – Groundfish Committee Recommendation

Amendment 16 adopts ACLs for groundfish stocks. Some of these ACLs are divided into either sub-ACLs that are subject to accountability measures (AMs), or other sub-components that are not subject to AMs. The amendment proposes that a portion of yellowtail flounder will be allocated to the scallop fishery. In FY 2010, the allocation is considered a sub-component, while in FY 2011 and beyond it will be considered a sub-ACL subject to AMs that will be adopted in a scallop amendment.

An estimate of the yellowtail flounder that will be caught by the scallop fishery in FY 2010 – FY 2012 if it harvests its projected yield was developed for four scallop management scenarios. The GB and SNE/MA yellowtail flounder that will be allocated to the fishery in those years is 90 percent of the amount for the scallop management alternative selected for Scallop FW 21. For CC/GOM yellowtail flounder, scallop fishery incidental catches are low enough that they will be considered part of the “other sub-component”. These catches will be monitored but a specific allocation will not be made in this action. An allocation may be made in the future.

This value will be adjusted for management uncertainty when the allocation becomes a sub-ACL (in FY 2011 and beyond). As explained in Appendix III, for GB and CC/GOM yellowtail flounder the sub-ACL will be set at 97 percent of the allocation, while for SNE/MA yellowtail flounder it will be set at 93 percent of the allocation.

The resulting values are shown in Table 9 for the four scallop management scenarios that were under consideration during development of this action. Scallop FW 21 implements the first listed management scenario (no new closure and $F=0.20$).

Rationale: This alternative recognizes the importance of yellowtail flounder to the prosecution of the scallop fishery and allocates most of the yellowtail flounder that the fishery is expected to catch if it harvests the available scallop yield. It also creates an incentive for scallop fishermen to reduce bycatch of yellowtail flounder in order to maximize scallop yield. With respect to Cape Cod/Gulf of Maine yellowtail flounder, no allocation is made since the incidental catch is a low percentage of the available catch and can be accommodated by the “other sub-components” category. An allocation may be made in the future.

ALTERNATIVES TO THE PROPOSED ACTION

Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010-2012

Table 9 – Sub-Option 1A – Groundfish Committee recommended allocation of yellowtail flounder to the scallop fishery. Values are metric tons, rounded to the nearest metric ton.

No Closure F = 0.20									
<i>Year</i>	<i>Total Expected to be Caught, YTF Stock Area</i>			<i>90 percent of Total</i>			<i>Sub-ACL</i>		
	<i>CC</i>	<i>GB</i>	<i>SNEMA</i>	<i>CC</i>	<i>GB</i>	<i>SNEMA</i>	<i>CC</i>	<i>GB</i>	<i>SNEMA</i>
2010	30	110	111		99	100		96	93
2011	26	226	96		203	86		197	80
2012	32	353	151		318	136		308	126
No Closure - F = 0.24									
2010	39	146	135		131	122		127	113
2011	26	230	98		207	88		201	82
2012	32	352	151		317	136		307	126
Closure F = 0.18									
2010	17	182	179		164	161		159	150
2011	13	256	130		230	117		223	109
2012	10	320	151		288	136		279	126
Closure F = 0.20									
2010	20	215	202		194	182		188	169
2011	13	263	134		237	121		230	112
2012	10	317	153		285	138		277	128

5.2 Commercial Fishery Effort Control Modification

5.2.1 Option One – No Action

Under this No Action option, the effort controls adopted by Amendment 16 would continue unchanged. The effort control alternative selected in A16 eliminated previously-existing differential DAS counting areas, reduced Category A DAS by 50 percent from the FW 42 allocations, and counted all DAS in 24-hour increments (i.e. 6 hours is counted as one DAS, 25 hours is counted as two DAS, etc.). Other measures that were in place prior to the implementation of Amendment 16 remained, including seasonal and rolling closures and gear requirements.

Trip Limits:

The trip limits in Table 10 were implemented for fishing on a Category A DAS, while all other trip limits while fishing on a Category A DAS were eliminated. For GB and GOM cod, Handgear A permits are allowed a 750-lb. per trip landing limit, while Handgear B permits are allowed 200 lbs. per trip.

Table 10 – No Action trip limits for common pool vessels

Stock	Amendment 16
GOM Cod	2,000 lbs./DAS; maximum 12,000 lbs/trip in GOM, 20,000 lbs/trip in GB; with the exception of the Eastern U.S./Canada area, where the Regional Administrator will specify the appropriate trip limit at the beginning of the fishing year (the default trip limit for this area remains 500 lbs./DAS, up to a maximum of 5,000 lbs./trip).
GB Cod	
CCGOM Yellowtail Flounder	250 lbs./ DAS up to a maximum of 1,500 lbs./trip
SNE/MA Yellowtail Flounder	250 lbs./ DAS up to a maximum of 1,500 lbs./trip
SNE/MA Winter Flounder	0
Windowpane Flounder	0
Atlantic Halibut	One fish/trip
Ocean Pout	0
Atlantic Wolffish	0

Restricted Gear Areas:

Two restricted gear areas were established in Amendment 16 (Figure 1). Vessels fishing under a groundfish DAS are required to comply with the gear requirements for these areas.

Administration: Vessel operators must comply with the following administrative requirements to fish in these areas:

- As specified by the Regional Administrator, vessel operators must either request a Letter of Authorization (LOA) from NMFS or must make a specific VMS

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Commercial Fishery Effort Control Modification

declaration to fish in the areas. The minimum participation period if an LOA is required is seven days.

- A vessel can fish inside and outside the area on the same trip, but is subject to the most restrictive measures (gear, trip limits, etc.) for the entire trip.
- Existing gear performance standards apply to gear used in these areas. Gillnets with large mesh that are allowed in the area are allowed to retain monkfish subject to monkfish possession limits and not the gear performance standards.
- Other gear is not allowed on board when operating in these areas.
- Additional gear (such as the five-point trawl, raised footrope trawl, or tie-down sink gillnets with mesh less than ten inches) may be considered for use in this area if approved by the Regional Administrator consistent with the regulations for approving additional gear in special management programs.

Areas: The areas are defined as:

Western GB Multispecies RGA:

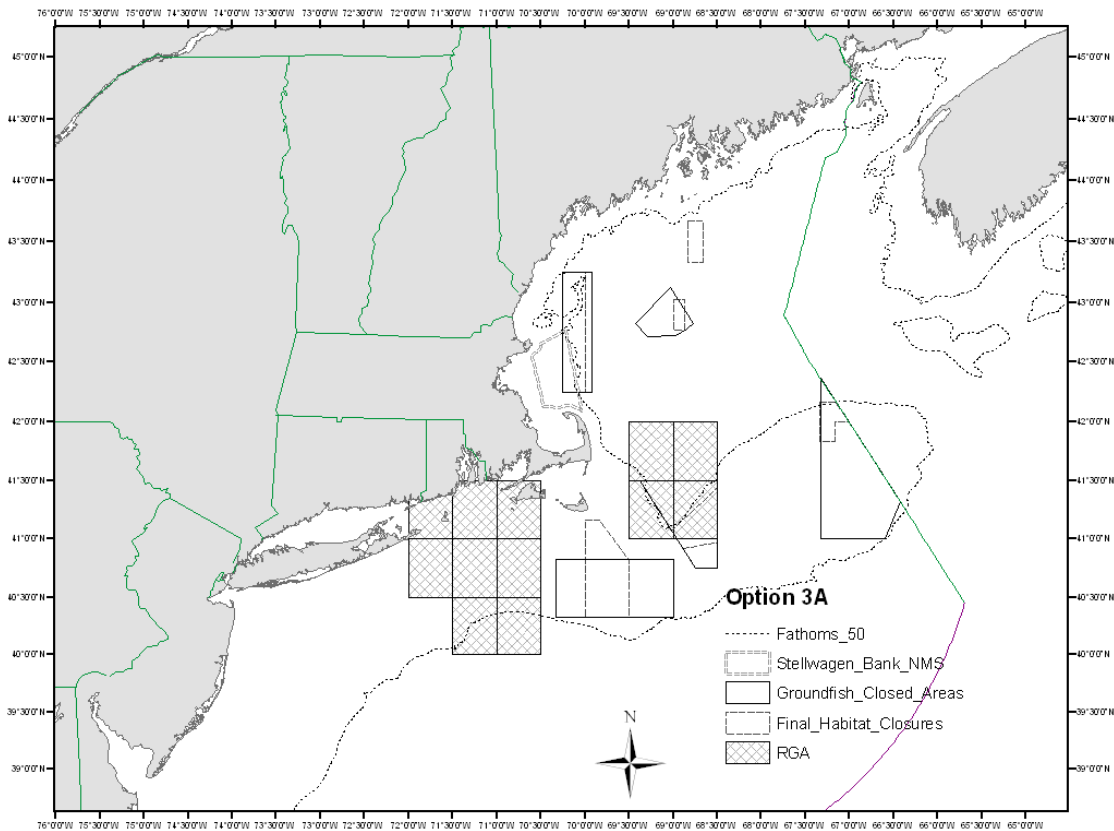
42-00N 69-30W
42-00N 68-30W
41-00N 68-30W
41-00N 69-30W

Southern New England Multispecies RGA:

41-30N 70-30W
40-00N 70-30W
40-00N 71-30W
40-30N 71-30W
40-30N 72-00W
North to the Connecticut shoreline at 72-00W
East along the shoreline to 41-30N

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Figure 1 –Restricted gear areas adopted in Amendment 16



Gear restrictions include the following authorized gears:

Trawl Gear: Trawl vessels fishing under a groundfish DAS must use a haddock separator trawl, eliminator trawl, or the rope trawl. The haddock separator trawl and Ruhle trawl are described in existing regulations.

Rope trawl: The design includes a four-panel structure to increase headline height and large mesh in the front part of the trawl. The separator panel is made from a series of parallel ropes of different lengths. The panel is one-third from the fishing line in the vertical plane. There is a large escape opening in the bottom of the trawl. Additional details will be clarified by NMFS in the proposed rule and final regulations.

Sink gillnets: No tiedown nets allowed using mesh less than ten inches. Stand-up gillnets are allowed with legal size mesh.

Longline/tub trawls

Handgear

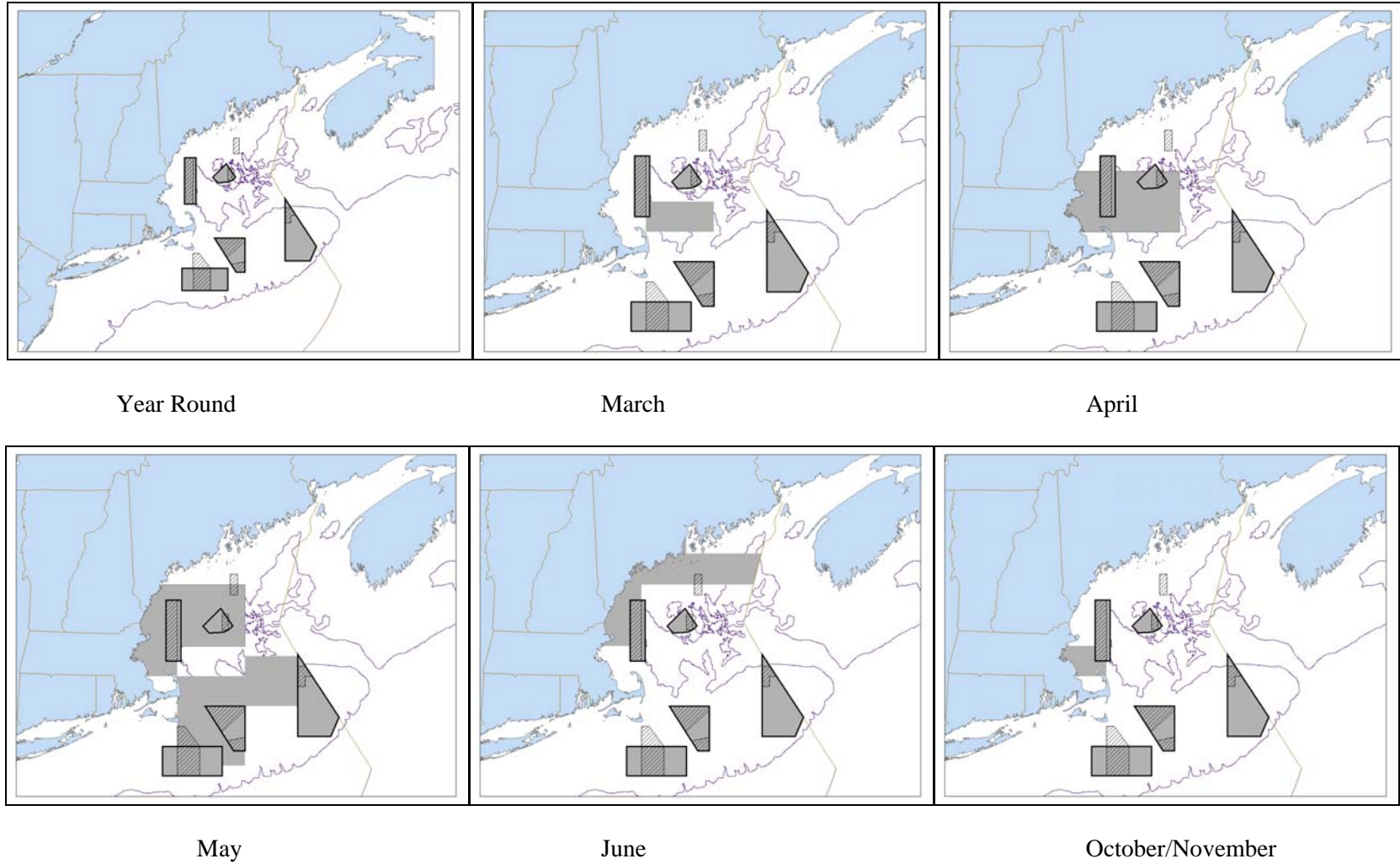
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Table 11 – Gear restrictions under No Action alternative

	GOM	GB	SNE	Mid-Atl
MINIMUM MESH SIZE RESTRICTIONS FOR GILLNET GEAR				
NE Multispecies Day Gillnet Category*	<u>Roundfish nets</u> 6.5" (16.5 cm) mesh; 50-net allowance	<u>All nets</u> 6.5" (16.5 cm) mesh; 50-net allowance	<u>All nets</u> 6.5" (16.5 cm) mesh; 75-net allowance	<u>Roundfish nets</u> 6.5" (16.5 cm) mesh; 75-net allowance
	<u>Flatfish nets</u> 6.5" (16.5 cm) mesh; 100-net allowance			<u>Flatfish nets</u> 6.5" (16.5 cm) mesh; 75-net allowance
NE Multispecies Trip Gillnet Category*	<u>All nets</u> 6.5" (16.5 cm) mesh; 150-net allowance	<u>All nets</u> 6.5" (16.5 cm) mesh; 150-net allowance	<u>All nets</u> 6.5" (16.5 cm) mesh; 75-net allowance	<u>All gillnet gear</u> 6.5" (16.5 cm) mesh; 75-net allowance
Monkfish Vessels**	10" (25.4 cm) mesh/150-net allowance			
MINIMUM MESH SIZE RESTRICTIONS FOR TRAWL GEAR				
Codend only mesh size*	6.5" (16.5 cm) diamond or square		7.0" (17.8 cm) diamond or 6.5" (16.5 cm) square	6.5" (16.5 cm) diamond or square
Large Mesh Category - entire net	8.5" (21.59 cm) diamond or square			7.5" (19.0 cm) diamond or 8.0" (20.3 cm) square
MAXIMUM NUMBER OF HOOKS AND SIZE RESTRICTIONS FOR HOOK-GEAR***				
Limited access multispecies vessels	2,000 hooks	3,600 hooks	2,000 hooks	4,500 hooks (Hook- gear vessels only)
	No less than 6" (15.2 cm) spacing allowed between the fairlead rollers			
	12/0 circle hooks required for longline gear			N/A

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Figure 2 – No action alternative closed areas used as mortality controls



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Closed Areas:

Amendment 16 did not authorize additional closed areas. However, closures in place prior to its adoption remain in effect (Figure 2).

In-Season Adjustments to Mortality Control Measures:

The Regional Administrator has the authority to impose trip limits as necessary under the provisions implementing the U.S./Canada Resource Sharing Understanding. Under those regulations, the Regional Administrator specifies the trip limit for GB yellowtail flounder. In all cases, only one landing limit can be landed in any twenty-four hour period. If a vessel fishes in more than one area, the most restrictive trip limit for a species applies for the entire trip.

The RA does not have the authority to modify effort control measures in other areas absent Council action. The only exception lies in the administration of accountability measures including post-season differential DAS adjustments for FY 2010 and 2011 and the hard TAC AM in FY 2012.

5.2.2 Option Three – Modification to Days At Sea Counting

The inshore Gulf of Maine area depicted in Figure 3 will be subject to differential DAS counting at a rate of 2:1 at the outset of FY 2010. The area to be included consists of Blocks 114-116, 123-125, 132, 133, and 138-140. The area described for the inshore GOM is the same as is adopted for the Amendment 16 differential DAS accountability measure, as shown in Figure 3. If Option 4 of this section is also adopted, these counting rates will apply at the start of the fishing year and may be changed by the RA during the year.

Inshore GOM Differential DAS Area

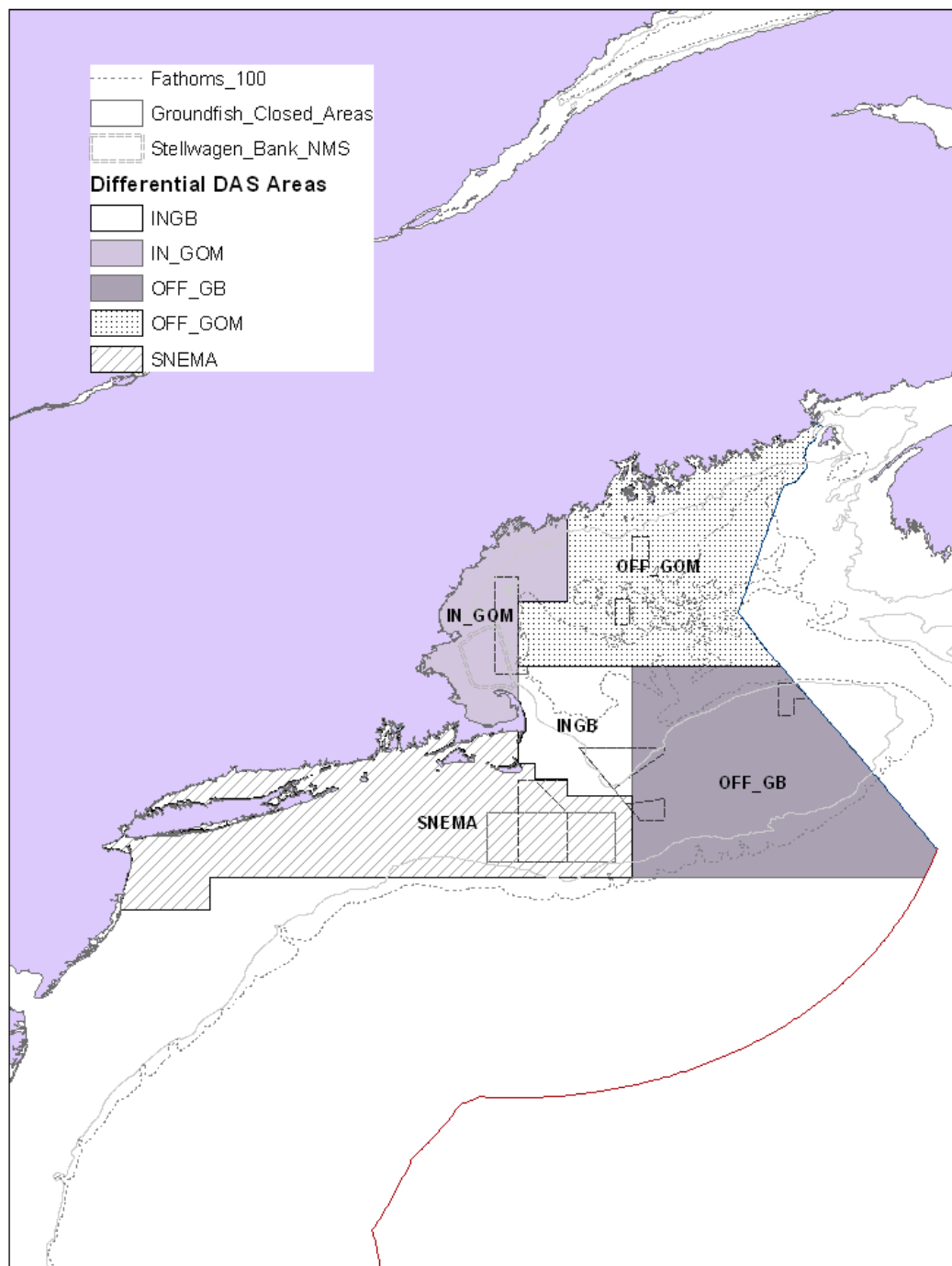
Point	N. Latitude	W. Longitude
INGOM1	(¹)	69° 30'
INGOM2	43° 00'	69° 30'
INGOM3	43° 00'	70° 00'
INGOM4	(²)	70° 00'

(¹) Intersection with ME shoreline

(²) North-facing shoreline of Cape Cod, MA

Rationale: The use of a differential DAS adjustment as a mortality reduction measure is based on the concept that if stock size is known a change in catch results in a proportional change in exploitation. The area proposed coincides with a broad reporting area, simplifying administration and matching the differential DAS area with stock boundaries. Concern over rapidly exceeding the common pool sub-ACL for GOM cod and pollock stocks would lead to the differential DAS area being set somewhat conservatively at the start of the season in order to account for uncertainty over sector membership and common pool fishing practices.

Figure 3 – Proposed areas for differential DAS AM



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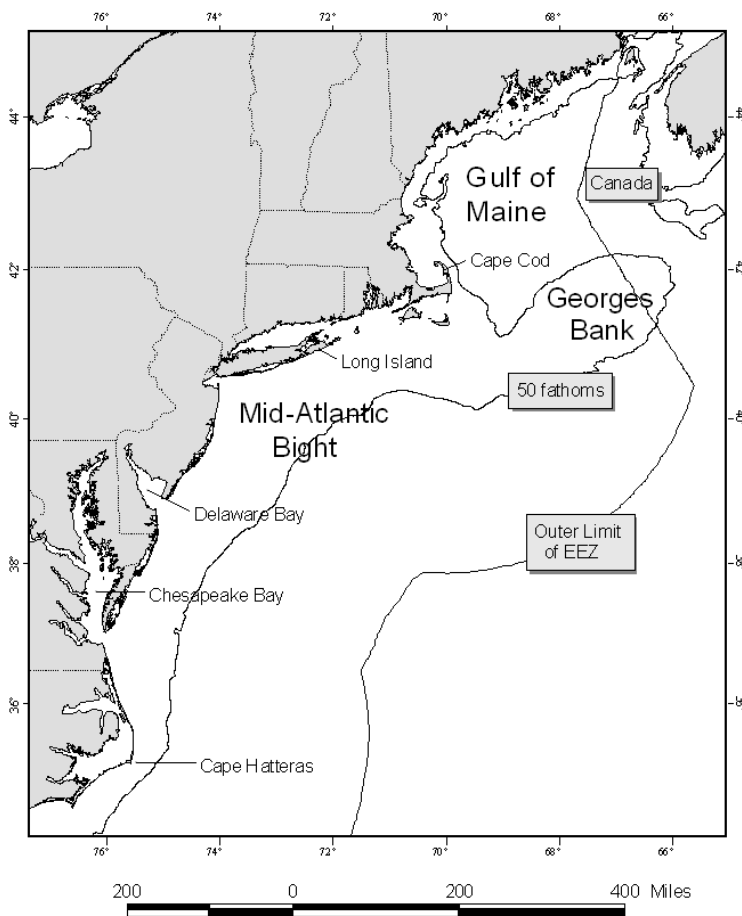
6.0 AFFECTED ENVIRONMENT

The Valued Ecosystem Components (VECs) affected by the Proposed Action 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 4) has been described as including the area from the Gulf of Maine south to Cape Hatteras, North Carolina, extending from the coast seaward to the edge of the continental shelf, including offshore to the Gulf Stream (Sherman et al. 1996). The continental slope includes the area east of the shelf, out to a depth of 2,000 meters (m). Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the southern New England/Mid-Atlantic region, and the continental slope. Since the groundfish fleet will primarily be fishing in the inshore and offshore waters of the Gulf of Maine, Georges Bank, and the southern New England/Mid-Atlantic areas, the description of the physical and biological environment is focused on these sub-regions. Information on the affected environment was extracted from Stevenson et al. (2004).

Figure 4 – Northeast U.S. Shelf Ecosystem

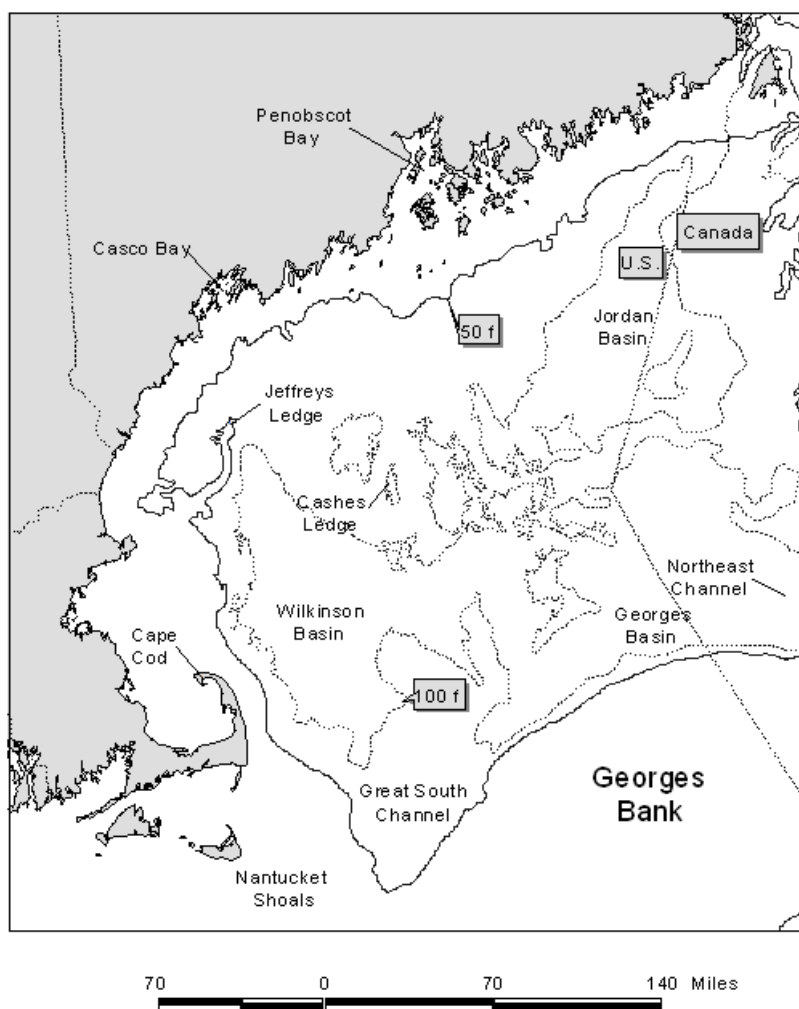


6.1.1 Affected Physical Environment

6.1.1.1 Gulf of Maine

The Gulf of Maine is an enclosed coastal sea, bounded on the east by Browns Bank, on the north by the Nova Scotian (Scotian) Shelf, on the west by the New England states, and on the south by Cape Cod and Georges Bank (Figure 5). The Gulf of Maine is a boreal environment and is 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 250 m, with a maximum depth of 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 9 m below the surface.

Figure 5 – 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 depth of about 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 20 to 40 m, except off eastern Maine where a gravel-covered plain exists to depths of at least 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. Biomass was dominated by bivalves, sea cucumbers, sand dollars, annelids, and sea anemones. Watling (1998) identified seven different bottom assemblages that occur on the following habitat types:

Sandy offshore banks: fauna are characteristically sand dwellers with an abundant interstitial component;

Rocky offshore ledges: fauna are predominantly sponges, tunicates, bryozoans, hydroids, and other hard bottom dwellers;

Shallow (< 60 m) temperate bottoms with mixed substrate: fauna population is rich and diverse, primarily comprised of polychaetes and crustaceans;

Primarily fine muds at depths of 60 to 140 m within cold Gulf of Maine Intermediate Water²: fauna are dominated by polychaetes, shrimp, and cerianthid anemones;

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;

Deep basin, muddy bottom, overlaying water usually 7 to 8°C: fauna densities are not high, dominated by brittle stars and sea pens, and sporadically by a tube-making amphipods; and

Upper slope, mixed sediment of either fine muds or mixture of mud and gravel, water temperatures always greater than 8°C: upper slope fauna extending into the Northeast Channel.

Two studies (Gabriel 1992, Overholtz and Tyler 1985) reported common³ demersal fish species by assemblages in the Gulf of Maine and Georges Bank:

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.

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

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.

6.1.1.2 Georges Bank

Georges Bank is a shallow (3 to 150 m depth), elongate (161 kilometer [km] wide by 322 km long) extension of the continental shelf that was formed during the Wisconsinian glacial episode (Figure 4.1-1). It is characterized by a steep slope on its northern edge and a broad, flat, gently sloping southern flank and has steep submarine canyons on its eastern and southeastern edges. It is characterized by 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. It is anticipated that erosion and reworking of sediments by the action of rising sea level as well as tidal and storm currents reduces the amount of sand and cause an overall coarsening of the bottom sediments (Valentine and Lough 1991).

Bottom topography on eastern Georges Bank is characterized by 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 is characterized by 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 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 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, which influence productivity and may influence fish abundance and distribution.

Georges Bank has been historically characterized by 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, and overall biomass was dominated by sand dollars and bivalves (Theroux and Wigley 1998). Using the same database, four macrobenthic invertebrate assemblages that occur on similar habitat type were identified (Theroux and Grosslein 1987):

The Western Basin assemblage is found in comparatively deepwater (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.

The Northeast Peak assemblage is found in variable depth 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.

The Central Georges Bank assemblage occupies the greatest area, including the central and northern portions of Georges Bank in depths less than 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.

The Southern Georges Bank assemblage is found on the southern and southwestern flanks at depths from 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.

As stated in Section 4.1.1.1, 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.

6.1.1.3 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 4.1-1). The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England and generally includes the area of the continental shelf south of Cape Cod from the Great South Channel to Hudson Canyon. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (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, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations during past ice ages. 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. On the slope, silty sand, silt, and clay predominate. Permanent sand ridges occur in groups with heights of about 10 m, lengths of 10 to 50 km and spacing of 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 2 m, lengths of 50 to 100 m, and 1 to 2 km between patches. The sand waves are usually found on the inner shelf and are temporary features that form and re-form in different locations, 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 significant Mid-Atlantic Bight habitat, 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 attracted 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 are comprised of either exposed rock, wrecks, kelp, or other hard material, and these are generally dominated by boring mollusks, algae, sponges, anemones, hydroids, and coral. 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 are generally comprised 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.

The benthic inhabitants of this primarily sandy environment are dominated in terms of numbers by amphipod crustaceans and bivalve mollusks. Biomass is dominated by mollusks (70 percent) (Theroux and Wigley 1998). Pratt (1973) identified three broad faunal zones related to water depth and sediment type:

The “sand fauna” zone is dominated by polychaetes 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 50 m.

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.

Silts and clays become predominant at the shelf break and line the Hudson Shelf Valley supporting the “silt-clay fauna.”

Rather than substrate as in the Gulf of Maine and Georges Bank, latitude and water depth are considered to be the primary factors influencing demersal fish species distribution in the Mid-Atlantic Bight area. The following assemblages were identified by Colvocoresses and Musick (1984) 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.

6.1.2 Habitat

Habitats provide living things with the basic life requirements of nourishment and shelter, ultimately providing for both individual and population growth. The fishery resources of a region are influenced by the quantity and quality of available habitat. Depth, temperature, substrate, circulation, salinity, light, dissolved oxygen, and nutrient supply are important parameters of a given habitat which, in turn, determine the type and level of resource population that the habitat supports. Table 12 briefly summarizes the habitat requirements for each of the 12 groundfish species managed by the Northeast Multispecies (large-mesh) FMP, some of which consist of multiple stocks within the Northeast Multispecies FMP. Information for this table was extracted from the original FMP and profiles available from NMFS (Clark 1998). Essential fish habitat information for egg, juvenile and adult life stages for these species was compiled from Stevenson et al. 2004 (Table 12). 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 12.

Table 12 - 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

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
Atlantic cod	Gulf of Maine, Georges Bank and southward	Omnivorous (invertebrates and fish)	(J): 25-75 m (82-245 ft) (A): 10-150 m (33-492 ft)	(J): Cobble or gravel bottom substrates (A): Rocks, pebbles, or gravel bottom substrate	Otter trawl, longlines, gillnets
Haddock	southwestern Gulf of Maine and shallow waters of Georges Bank	Benthic feeders (amphipods, polychaetes, echinoderms), bivalves, and some fish	(J): 35-100 m (115– 28 ft) (A): 40-150 m (131-492 ft)	(J): Pebble and gravel bottom substrates (A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches	Otter trawl, longlines, gillnets
Acadian redfish	Gulf of Maine, deep portions of Georges Bank and Great South Channel	Crustaceans	(J): 25-400 m (82-1,312 ft) (A): 50-350 m (164– 1,148 ft)	(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): 0-250 m (0-820 ft) (A): 15-365 m (49- 1,198 ft)	(J): Bottom habitats with aquatic vegetation or substrate of sand, mud, or rocks (A): Hard bottom habitats including artificial reefs	Otter trawl, gillnets

AFFECTED ENVIRONMENT
Physical Environment/Habitat/EFH

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
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 crustaceans	(E): <50 m (<164 ft)	(E): Bottom habitats, generally hard bottom sheltered nests, holes, or crevices where juveniles are guarded.	Otter trawl
			(L): <50 m (<164 ft)	(L): Hard bottom nesting areas	
			(J): <80 m (262 ft)	(J): Bottom habitat, often smooth areas near rocks or algae	
			(A): <110 m (361 ft)	(A): Bottom habitats; dig depressions in soft sediments	
Atlantic Halibut	Gulf of Maine, Georges Bank	Juveniles feed on annelid worms and crustaceans, adults mostly feed on fish	(J): 20-60 m (66-197 ft)	(J): Bottom habitat with a substrate of sand, gravel, or clay	Otter trawl, longlines
			(A): 100-700 m (328-2,297 ft)	(A): Same as for (J)	
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): 5-225 m (16-738 ft)	(J): Bottom habitat with seagrass beds or substrate of mud or fine-grained sand	Otter trawl, gillnets
			(A): 5-325 m (16-1,066 ft)	(A): Bottom habitats with substrate of mud or fine grained sand	
Yellowtail flounder	Gulf of Maine, southern New England, Georges Bank	Amphipods and polychaetes	(J): 20-50 m (66-164 ft)	(J): Bottom habitats with substrate of sand or sand and mud	Otter trawl
			(A): 20-50 m (66-164 ft)	(A): Same as for (J)	

AFFECTED ENVIRONMENT
Physical Environment/Habitat/EFH

Species	Geographic Region of the Northwest Atlantic	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
American plaice	Gulf of Maine, Georges Bank	Polychaetes, crustaceans, mollusks, echinoderms	(J): 45-150 m (148-492 ft) (A): 45-175 m (148-574 ft)	(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): 50-450 m (164-1,476 ft) (A): 25-300 m (82-984 ft)	(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): <5 m (16 ft) (J): 0.1-10 m (0.3-32 ft) (1-50 m age 1+) (3.2-164 ft) (A): 1-100 m (3.2-328 ft)	(E): Bottom habitats with a substrate of sand, muddy sand, mud, and gravel (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 Proposed in Amendment 16	Gulf of Maine & Georges Bank	Mollusks, brittle stars, crabs, and sea urchins	(J): 40-240 m (131.2-787.4 ft) (A): 40-240 m (131.2-787.4 ft)	J): Rocky bottom and coarse sediments (A): Same as for (J)	Otter trawl, longlines, and gillnets
Windowpane flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England	Juveniles mostly crustaceans; adults feed on crustaceans and fish	(J): 1-100 m (3.2-328 ft) (A): 1-75 m (3.2-574 ft)	(J): Bottom habitats with substrate of mud or fine grained sand (A): Same as for (J)	Otter trawl

Note: Species life stages are summarized by letter in parentheses following species name. A = adult; E = egg; J = juvenile; m = meter.

6.1.3 Essential Fish Habitat (EFH)

EFH is defined by the Sustainable Fisheries Act of 1996 as “[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The environment that could potentially be affected by the Proposed Action has been identified as 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. EFH descriptions of the general substrate or bottom types for all the benthic life stages of the species managed under these FMPs are summarized in Table 12. Full descriptions and maps of EFH for each species and life stage (except Atlantic wolffish) 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.

6.1.4 Gear Types and Interaction with Habitat

The groundfish fleet fishes for target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines). This section discusses the characteristics of each of the gear types as well as the typical impacts to the physical habitat associated with each of these gear types.

6.1.4.1 Gear Types

The characteristics of typical gear types used by the multispecies fishery are summarized in Table 13.

Table 13 - Descriptions of the Fixed Gear Types Used by the Multispecies Fishery

Gear Type	Trawl	Sink/ Anchor Gillnets	Bottom Longlines	Hook and Line
Total Length	Varies	90 m long per net.	~450 m.	Varies
Lines	N/A	Leadline and floatline with webbing (mesh) connecting	Mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches long, 3 to 6 inches 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	No nets, but 12/0 circle hooks are required.	No nets, but single to multiple hooks, "umbrella rigs"
Anchoring	N/A	22 lb (9–11 kg) Danforth-style anchors are required at each end of the net string	20-24lb (9-11kg) 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

6.1.4.2 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. Bottom trawls are designed to be towed along the seafloor and to catch a variety of demersal fish and invertebrate species.

The mid-water trawl is used to capture pelagic species throughout the water column. The mouth of the net typically ranges from 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. The fish are usually removed from the net while it remains in the water alongside the vessel by means of a suction pump. In some cases, the fish are removed from the net by repeatedly lifting the cod end aboard the vessel until the entire catch is in the hold.

Three general types of bottom trawl are used in the Northeast Region, but bottom otter trawls account for nearly all commercial bottom trawling activity. There is a wide range of otter trawl types used in the Northeast as a result of the diversity of fisheries and bottom types encountered in the region (NREFHSC 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. Bottom trawls are towed at a variety of speeds, but average about 5.6 km/hour (3 knots). Use of this gear in the Northeast is managed under several federal FMPs. 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, and to get fish like flounders - that lie in contact with the seafloor - 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 rise higher off the bottom than flatfish (NREFHSC 2002).

Bottom otter trawls that are used on "hard" bottom (i.e., gravel or rocky bottom), or mud or sand bottom with occasional boulders, are rigged with rockhopper gear. The purpose of the "ground gear" in this case is to get the sweep over irregularities in the bottom without damaging the net. The purpose of the sweep in trawls rigged for fishing on smooth bottoms is 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 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 that it replaces (Carr and Milliken 1998).

6.1.4.3 Gillnet Gear

The fishery also uses individual sink/anchor gillnets which are about 90 m long and 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 headline, webbing and floatline. In New England, headlines are approximately 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 headlines have the most contact with the bottom. For New England groundfish, frequency of tending ranges from daily to semiweekly [Northeast Region Essential Fish Habitat Steering Committee (NREFHSC 2002)]. All SHS gillnet vessels would be day fishing vessels.

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. Bottom gillnets are used to catch a wide range of species. Bottom gillnets are fished in two different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets are typically used to 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 used to catch flounders and monkfish and are left in the water for 3 to 4 days. Other species caught in bottom gillnets in are dogfish and skates.

6.1.4.4 Hook and Line Gear

6.1.4.4.1 Hand Lines/Rod and Reel

The simplest form of hook-and-line fishing is the hand line, which 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 and the sinkers vary from stones to cast lead. The hooks can vary from single to multiple arrangements in “umbrella” rigs. An attraction device must be used with the hook, usually consisting of a natural bait or an artificial lure. Hand lines can be carried by currents until retrieved or fished in such a manner as to hit bottom and bounce (Stevenson et al. 2004). Hand lines and rods and reels are used in the Northeast Region to catch a variety of demersal species.

6.1.4.4.2 Mechanized Line Fishing

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

Jigging machines are used to jerk a line with several unbaited hooks up in the water to snag a fish in its body and is commonly used to catch squid. Jigging machine lines are generally fished in waters up to 600 m (1970 ft) deep. Hooks and sinkers can contact the bottom, depending upon the way the gear is used and may catch a variety of demersal species.

6.1.4.5 Longlines

The remaining gear type that is used by the fishery are bottom longlines which are a long length of line, often several miles long, 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 450 m and are deployed with 9 to 11 kg anchors. The mainline is a parachute cord. Gangions are typically 40 centimeters (cm) long and 1 to 1.8 m apart and are made of shrimp twine. These longlines are usually set for a few hours at a time (NREFHSC 2002).

When fishing with hooks, all hooks must be 12/0 circle hooks. A “circle hook” is, defined as a hook with the point turned back towards the shank and 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. The design of circle hooks enables them to be employed to reduce the damage to habitat features that would occur with use of other hook shapes (NREFHSC 2002).

6.1.4.6 Gear Interaction with Habitat

Historically, commercial fishing in the region has been conducted using hook and line, longline, gillnets and trawls. For decades, trawls have been intensively used throughout the region and have accounted for the majority of commercial fishing activity in the multispecies fishery off New England.

Amendment 13 (NEFMC 2003) describes the general effects of bottom trawls on benthic marine habitats. The primary source document used for this analysis was an advisory report prepared for the International Council for the Exploration of the Seas (ICES) that identified a number of possible effects of beam trawls and bottom otter trawls on benthic habitats (ICES 2000). This report is based on scientific findings summarized in Lindeboom and de Groot (1998), which were peer-reviewed by an ICES working group. The focus of the report is the Irish Sea and North Sea, but it also includes assessments of effects in other areas. Two general conclusions were: 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). Regarding direct habitat effects, the report also concluded that:

Loss or dispersal of physical features such as peat banks or boulder reefs (changes are always permanent and lead to an overall change in habitat diversity, which 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 (changes may be permanent leading to an overall change in habitat diversity, which could in turn lead to the local loss of species and species assemblages dependent on such biogenic features);

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 (changes are not likely to be permanent); and

Alteration of the detailed physical features of the seafloor by reshaping seabed features such as sand ripples and damaging burrows and associated structures that provide important habitats for smaller animals and can be used by fish to reduce their energy requirements (changes are not likely to be permanent).

A more recent evaluation of the habitat effects of trawling and dredging was prepared by the Committee on Ecosystem Effects of Fishing for the National Research Council's Ocean Studies Board (NRC 2002). Trawl gear evaluated included bottom otter trawls and beam trawls. This report identified four general conclusions regarding the types of habitat modifications caused by trawls:

Trawling reduces habitat complexity;

Repeated trawling results in discernable 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.

An additional source of information for various gear types that relates specifically to the Northeast region is the report of 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) in October 2001 (NEFSC 2002). A panel of invited 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: 1) evaluating the existing scientific research on the effects of fishing gear on benthic habitats; 2) determining the degree of impact from various gear types on benthic habitats in the Northeast; 3) specifying the type of evidence that is available to support the conclusions made about the degree of impact; 4) ranking the relative importance of gear impacts on various habitat types; and 5) 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 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.

Additional information is provided in this report 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 to rank these three substrates in terms of their vulnerability to the effects of

bottom trawling, although other factors such as frequency of disturbance from fishing and from natural events are also important. In general, impacts from trawling were determined to be greater in gravel/rock habitats with attached epifauna. Impacts on biological structure were ranked higher than impacts on physical structure. Effects of trawls on major physical features in mud (deep water clay-bottom habitats) and gravel bottom were described as permanent, and 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 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 longlines on sand would not be expected.

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), was also summarized in Amendment 13. 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 Exploration of the Sea (ICES) and National Research Council (NRC) reports, individual types of trawls and dredges were not evaluated. The impacts of bottom gillnets, traps, and longlines were limited to warm or shallow water environments with rooted aquatic vegetation or “live bottom” environments (e.g., coral reefs).

6.2 Target Species

This section describes the species life history and stock population status for each of the 20 fish stocks that are managed under the Northeast Multispecies FMP that would be harvested by the groundfish fishery under provisions of the FMP. The description of species habitat associations described in Section 5.1.2 provides context for considering the interactions between gear and species. A comparison of depth-related demersal fish assemblages of Georges Bank and the Gulf of Maine is also provided for additional context. The discussion of allocated target species is concluded with an analysis of the interaction between the gear types the fishery will use (as described in Section 5.1.4) and allocated species. Most of the following discussions have been adapted largely from the GARM III report (NEFSC 2008) and can be accessed via the NEFMC website at <http://www.nefmc.org>.

6.2.1 Species and Stock Status Descriptions

The allocated target stocks for the fishery are:

- Gulf of Maine (GOM) Cod
- Georges Bank (GB) Cod
- GOM Haddock
- GB Haddock
- Redfish
- Pollock
- White Hake

AFFECTED ENVIRONMENT

Target Species

Cape Cod/GOM Yellowtail Flounder

GB Yellowtail Flounder

SNE/MA Yellowtail Flounder

GOM Winter Flounder

GB Winter Flounder

SNE/MA Winter Flounder

Witch Flounder

American Plaice

Northern Windowpane Flounder

Southern Windowpane Flounder

Ocean Pout

Halibut

Atlantic Wolffish

Other species potentially affected by the Proposed Action are:

Spiny Dogfish

Skates

Monkfish

Spiny dogfish, skates, and monkfish may be affected by the Proposed Action and are considered in this EA as non-allocated bycatch in Section 5.3. These species are not allocated under the Northeast Multispecies FMP and are managed under their respective FMPs.

Atlantic halibut, ocean pout, windowpane flounder, and SNE/Mid-Atlantic winter flounder do not have sector allocations but are also managed under the Northeast Multispecies FMP. Sector and Common Pool vessels are permitted to retain 1 halibut per trip. Wolffish has been provisionally added to the list of stocks not allocated under the Northeast Multispecies FMP. These species stocks are addressed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a), and are not considered further within this EA.

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 Northwest, 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, which is related 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 10 and 150 m and at temperatures between 0 and 10°C. Spawning occurs near bottom during winter and early spring, usually in water temperatures between 5 and 7°C. Eggs are pelagic, buoyant, spherical, and transparent, and drift for 2 to 3 weeks before hatching. The larvae are also pelagic until reaching 4 to 6 cm in about 3 months, at which point descending 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 occurring in the water column. Spawning occurs year-round, with a peak in winter and spring. Peak spawning is related to environmental conditions. It is delayed until spring when winters are severe and peaks in winter when mild.

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 1990s from 11,100 mt in 1997 to 34,000 mt in 2007, but the stock remains low relative to historic levels. The stock is not overfished, but overfishing is occurring.

6.2.1.2 Georges Bank Cod

Life History: The GB cod stock 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 10 and 150 m and at temperatures between 0 and 10°C. Spawning occurs near bottom during winter and early spring, usually in water temperatures between 5 and 7°C. Eggs are pelagic, buoyant, spherical, and transparent and drift for 2 to 3 weeks before hatching. The larvae are also pelagic until reaching 4 to 6 cm in about 3 months, at which point descending to the bottom. 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, also occurring in the water column. Spawning occurs year-round, with a peak in winter and spring. Peak spawning is related to environmental conditions. It is delayed until spring when winters are severe and peaks in winter when mild.

Population Status: GB Atlantic cod is a transboundary stock that is harvested by both the U.S. and Canadian fishing fleets. The GB Atlantic 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 northwest and northeast Atlantic Ocean. This demersal gadoid species is distributed from Cape May, New Jersey to the Strait of Belle Isle, Newfoundland in the northwest Atlantic, where a total of six distinct haddock stocks have been identified. Two of these haddock stocks are found in U.S. waters associated with Georges Bank and Gulf of Maine.

Haddock spawn over various substrates including rocks, gravel, smooth sand, and mud. Eggs are broadcast and fertilized near the bottom. 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 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. Once suitable bottom habitat is located, juveniles settle into a demersal existence. Haddock do not make extensive seasonal migrations. In winter, haddock prefer deeper waters and tend to move shoreward in summer. Haddock are highly fecund broadcast spawners. Eggs are released near the ocean bottom in batches and fertilized by a courting male. 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. In the Gulf of Maine, Jeffreys Ledge and Stellwagen Bank are the two primary spawning sites.

Population Status: Based on the current assessment, the GOM haddock stock is not overfished and overfishing is not occurring.

6.2.1.4 Georges Bank Haddock

Life History: The general life history of GB haddock 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. continental shelf ecosystem. GB haddock spawning is concentrated 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 Gulf of Maine fishery does not target haddock and is directed mostly at flatfish for which the fleet uses large square (6.5 in) mesh gear, which leads to reduced selectivity on haddock. The Gulf of Maine haddock have lower weights at age than the Georges Bank stock and the age at 50 percent maturity was also lower for Gulf of Maine as compared to Georges Bank haddock.

Population Status: The GB haddock stock is a transboundary resource, which is co-managed with Canada. Substantial declines have recently occurred in the weights at age due to slower than average growth, particularly of the 2003 year-class. This 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.

6.2.1.5 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 where Acadian redfish appear to be the sole representative of the genus *Sebastes*. Acadian redfish inhabiting the waters of the Gulf of Maine and deeper portions of Georges Bank and the Great South Channel are managed as a unit stock in U.S. waters.

The redfish is a slow growing, long-lived, ovoviviparous species with an extremely low natural mortality rate. Redfish eggs are fertilized internally, 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 10 to 25 millimeters (mm). The post-larvae descend below the thermocline when about 25 mm in length. Young-of-the-year are pelagic until reaching 40 to 50 mm at 4 to 5 months old, at which point moving to the bottom, typically by early fall of their first year. Redfish of 22 cm or greater are considered adults. As a general rule, the size of landed redfish is positively correlated with depth. The reason for this may involve differential growth rates of stocks, confused species identification (deepwater redfish are a larger species), size-specific migration, gender-specific migration (females are larger), or a combination of these factors. Redfish make diurnal vertical migrations linked to their primary euphausiid prey. Nothing is known about redfish breeding behavior, but fertilization is internal and fecundity is relatively low.

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

6.2.1.6 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 the species between the Scotian Shelf, Georges Bank, and the Gulf of Maine. Pollock eggs are buoyant, rising into the water column after fertilization. The pelagic larval stage lasts for 3 to 4 months, at which 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 are found throughout the water column. With the exception of short migrations due to temperature changes and north-south movements for spawning, 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, a trend that has also been reported in other marine fish species (e.g., haddock, witch flounder). 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 8°C, and peaks when temperatures are approximately 4.5 to 6°C. Thus, most spawning occurs within a comparatively narrow range of temperatures.

Population Status: The stock is overfished and overfishing is occurring.

6.2.1.7 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; juveniles typically occupy shallower areas than adults, but individuals of all ages tend to move inshore or shoalward in summer, dispersing to deeper areas in winter. Larval distributions indicate the presence of two spawning groups in the Gulf of Maine, Georges Bank, and Scotian Shelf region, one which spawns in deep water on the continental slope in late winter and early spring, and a second that spawns on the Scotian Shelf in the summer. The eggs, larvae, and early juveniles are pelagic; older juveniles and adults are demersal. The eggs are buoyant. Pelagic juveniles become demersal at 50 to 60 mm total length. The pelagic juvenile stage lasts about two months. White hake attain a maximum length of 135 cm and weigh up to 22 kg; females are larger than males. 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.

Population Status: The stock is overfished and overfishing is occurring.

6.2.1.8 Cape Cod/Gulf of Maine Yellowtail Flounder

Life History: The yellowtail flounder, *Limanda ferruginea*, is a demersal flatfish distributed from Labrador to Chesapeake Bay generally at depths between 40 and 70 m. Off the U.S. coast, three stocks are considered for management purposes including Cape Cod/GOM, GB, and SNE/MA stocks. In the northwest Atlantic, spawning occurs from March through August at temperatures of 5 to 12°C. Yellowtail flounder spawn buoyant, spherical, pelagic eggs that lack an oil globule. Pelagic larvae are brief residents in the water column; transformation to the juvenile stage occurs at 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. Spawning takes place along continental shelf waters northwest of 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 is currently at the lowest level observed in the time series. Spawning stock biomass has increased the past few years.

6.2.1.9 Georges Bank Yellowtail Flounder

Life History: The general life history of the GB yellowtail flounder 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 continues to be overfished overfishing is continuing.

6.2.1.10 Southern New England/Mid-Atlantic Yellowtail Flounder

Life History: The general life history of the SNE/MA yellow tail flounder 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: The SNE/MA yellowtail flounder continues to be overfished and overfishing is still occurring. However, fishing mortality has been declining since 2005 and it is at lowest levels observed in the time series.

6.2.1.11 Gulf of Maine Winter Flounder

Life History: The winter flounder, *Psuedopleuronectes americanus*, is a demersal flatfish distributed in the northwest Atlantic from Labrador to Georgia. Important U.S. commercial and recreational fisheries exist from the Gulf of Maine to the Mid-Atlantic Bight. In U.S. waters, the resource is assessed and managed 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. After spawning, adults typically leave inshore areas when water temperatures exceed 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, when the left eye migrates to the right side of the body and the larvae become “flounder-like,” begins around 5 to 6 weeks after hatching, and is completed by the time the larvae are 8 to 9 mm in length at about 8 weeks after hatching. Off southern New England, newly metamorphosed young-of-the-year winter flounder take up residence in shallow water where individuals may grow to about 100 mm within the first year. Winter flounder spawn from winter through spring, with peak spawning occurring during February and March in Massachusetts Bay and south of Cape Cod, and somewhat later along the coast of Maine, continuing into May.

Population Status: The GOM winter flounder stock is the smallest of the three winter flounder stocks. None of the assessment models presented in GARM III were accepted and the stock’s status could not be determined. The review panel “... generally agreed that it is highly likely that biomass is below B_{MSY}, and that there is a substantial probability that it is below ½ B_{MSY}.” There is high uncertainty on the status determination. This is consistent with biomass trends in the other flatfish stocks.

6.2.1.12 Georges Bank Winter Flounder

Life History: The life history of the GB winter flounder is comparable to the GOM winter flounder as described above.

Population Status: The stock is overfished condition and overfishing is occurring.

6.2.1.13 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 is closely associated 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. Witch flounder are assessed 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 0 to 10°C.

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

6.2.1.14 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 spawn buoyant eggs, which lack oil globules. Transformation of the larvae and migration of the left eye begins when the larvae are approximately 20 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. American plaice have been categorized as batch spawners. Eggs are released in batches every few days over the spawning period. Adults spawn and fertilize their eggs at or near the bottom. Eggs drift into the upper water column after released. Eggs float and hatch at the surface and the amount of time between fertilization and hatching varies with water temperature. A large amount of time could pass before young fish finally settle to the bottom. In U.S. and Canadian waters, American plaice is regarded as 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.

6.2.1.15 Northern Windowpane Flounder

Life History

Windowpane or sand flounder, *Scophthalmus aquosus*, is a thin bodied, left eyed flatfish species distributed in the northwest Atlantic from the Gulf of St. Lawrence to Florida (Bigelow and Schroeder 1953). Windowpane prefer sandy bottom habitats and are most abundant from Georges Bank to the southern tip of Virginia. Windowpane occur in bays and estuaries at depths from the shoreline to 60 m. On Georges Bank, the species is most abundant on the shoals (depths < 60 m) during late spring through autumn but overwintering occurs in deeper waters out to 366 m (Chang et al. 1999). Spawning begins in February or March in inner shelf waters and extends onto Georges Bank in the summer. Fish grow quickly and reach a maximum length of about 46 cm. Sexual maturity occurs at 3-4 years of age and a median length of 22 cm. (females). (<http://www.nefsc.noaa.gov/sos/spsyn/fldrs/window/>)

Population Status: The GOM/GB (or Northern) Windowpane Flounder stock was overfished and overfishing was occurring in 2007.

6.2.1.16 Southern Windowpane Flounder

Life History: The life history of this stock is similar to that for GOM/GB windowpane flounder. There is evidence of a split spawning season, spring and winter.

Population Status: In 2007 this stock was not overfished but overfishing was occurring.

6.2.1.17 Ocean Pout

Life History: The ocean pout, *Zoarces americanus*, is a demersal eel-like species found in the Northwest Atlantic from Labrador to Delaware. In US waters, ocean pout are assessed as a unit stock from Gulf of Maine/Cape Cod Bay south to Delaware. Ocean pout may attain lengths up to 98 cm (39 in.) and weights of 5.3 kg (14.2 lb). Ocean pout prefer depths of 15 to 80 m (8 to 44 fm.) and temperatures of 6° to 7° C (43° to 45° F). Tagging studies and NEFSC bottom trawl survey data indicate that ocean pout do not undertake extensive migrations, but rather move seasonally to different substrates. During this period, ocean pout are not available to commercial fishing operations. Typically, catches increase when adults return to their feeding grounds in late autumn and winter. Median length at maturity for females was 26.2 cm and 31.3 cm for the Gulf of Maine area and Southern New England area, respectively, with a possible three-year egg development period. (<http://www.nefsc.noaa.gov/sos/spsyn/og/pout/>)

Population Status: In 2007 the stock was overfished but was not experiencing overfishing.

6.2.1.18 Southern New England//Mid-Atlantic Winter Flounder

Life History: The life history of this stock is similar to that for GOM winter flounder. Spawning occurs in late winter and early spring (November to April) after migrations inshore.

Population Status: In 2007 this stock was overfished and overfishing was occurring.

6.2.1.19 Atlantic Wolffish

Life History: Atlantic wolffish (*Anarhichas lupus*) are distributed on both sides of the North Atlantic Ocean. In the Georges Bank-Gulf of Maine region, abundance is highest in the southwestern portion at depths of 80 to 120 m, but wolffish are also found in waters from 40 to 240 m. Atlantic wolffish are sedentary and mostly solitary in habit, except during mating. They seem to prefer complex benthic habitats with large stones and rocks which provide shelter. The diet of Gulf of Maine Georges Bank wolffish consists primarily of bivalves, gastropods, decapods and echinoderms. Little is known about the biology, migration patterns or seasonal movements of Atlantic wolffish in the Gulf of Maine Georges Bank region. Peak spawning period is believed to occur from September to October. In the Gulf of Maine Georges Bank region individuals may attain lengths of 150 cm and weights of 18 kg (<http://www.nefsc.noaa.gov/sos/spsyn/og/wolf/>).

Population Status: In 2008 this stock was overfished. It could not be determined if overfishing was occurring.

6.2.2 Assemblages of Fish Species

Georges Bank and the Gulf of Maine have been historically characterized by high levels of fish production. Several studies have attempted to identify 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. Depth and salinity were identified as major physical influences explaining assemblage structure. Gabriel (1992) identified six assemblages, which are compared with the results of Overholtz and Tyler (1985) in Table 14 (adapted from Amendment 16). For the Affected Area, including southern New England, these assemblages and relationships are considered to be relatively consistent for purposes of general description. The assemblages include allocated target, non-allocated target, and bycatch species. As presented in Table 14, the terminology and definitions of habitat types varies slightly between the two studies. For further information on fish habitat relationships, see Table 12.

Table 14 – 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 ocean pout	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

Of the 19 groundfish stocks (including all management units of each species) included in the GARM III report (NEFSC 2008), benchmark assessments indicated that six stocks were fished below the fishing mortality rate that would produce maximum sustainable yield (F_{MSY}) (or its proxy) in 2007 and 13 were above (Table 15). The F_{MSY} is the fishing mortality rate (F) that produces the maximum sustainable yield (MSY), defined as the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological and environmental conditions (National Standards Guidelines 50 CFR 600.310). The most recent information regarding stock assessments is provided by the GARM III Report and can be accessed via the NEFMC website at <http://www.nefmc.org>. The information in this section is largely adapted from that report. The 19 groundfish stocks include the 14 allocated target stocks managed under the Northeast Multispecies FMP as well as non-allocated target stocks and additional bycatch stocks that may all be impacted to various degrees by groundfish fishing activities.

The results of GARM III show stocks of ocean pout and Atlantic halibut are being fished at a sustainable level, but the biomass indicates stocks have not yet been rebuilt and are considered to be overfished. Stocks of haddock have been rebuilt which indicates Amendment 13 and FW 42 management actions have had positive effects on certain groundfish stocks. All other groundfish stocks are still experiencing overfishing, indicating the need for additional management measures.

Table 15 – Status of the Northeast Groundfish Stocks in 2007 (GARM III)

Stock Status	Stock Status (GARM III)
Overfished and Overfishing Biomass < $\frac{1}{2} B_{MSY}$ and $F > F_{MSY}$	GB Cod GB Yellowtail SNE/MA Yellowtail GOM/Cape Cod Yellowtail SNE/MA Winter Flounder White Hake Pollock Witch Flounder GB Winter Flounder Northern Windowpane
Overfished but not Overfishing Biomass < $\frac{1}{2} B_{MSY}$ and $F < F_{MSY}$	Ocean Pout Halibut Atlantic wolffish (overfished but unknown if overfishing is occurring)
Not Overfished but Overfishing Biomass > $\frac{1}{2} B_{MSY}$ and $F > F_{MSY}$	GOM Cod Southern Windowpane
Not Overfished and not Overfishing Biomass > $\frac{1}{2} B_{MSY}$ and $F < F_{MSY}$	Redfish Plaice GB Haddock GOM Haddock
Unknown	GOM winter flounder

6.2.4 Areas Closed to Fishing within the Groundfish Fishery Area

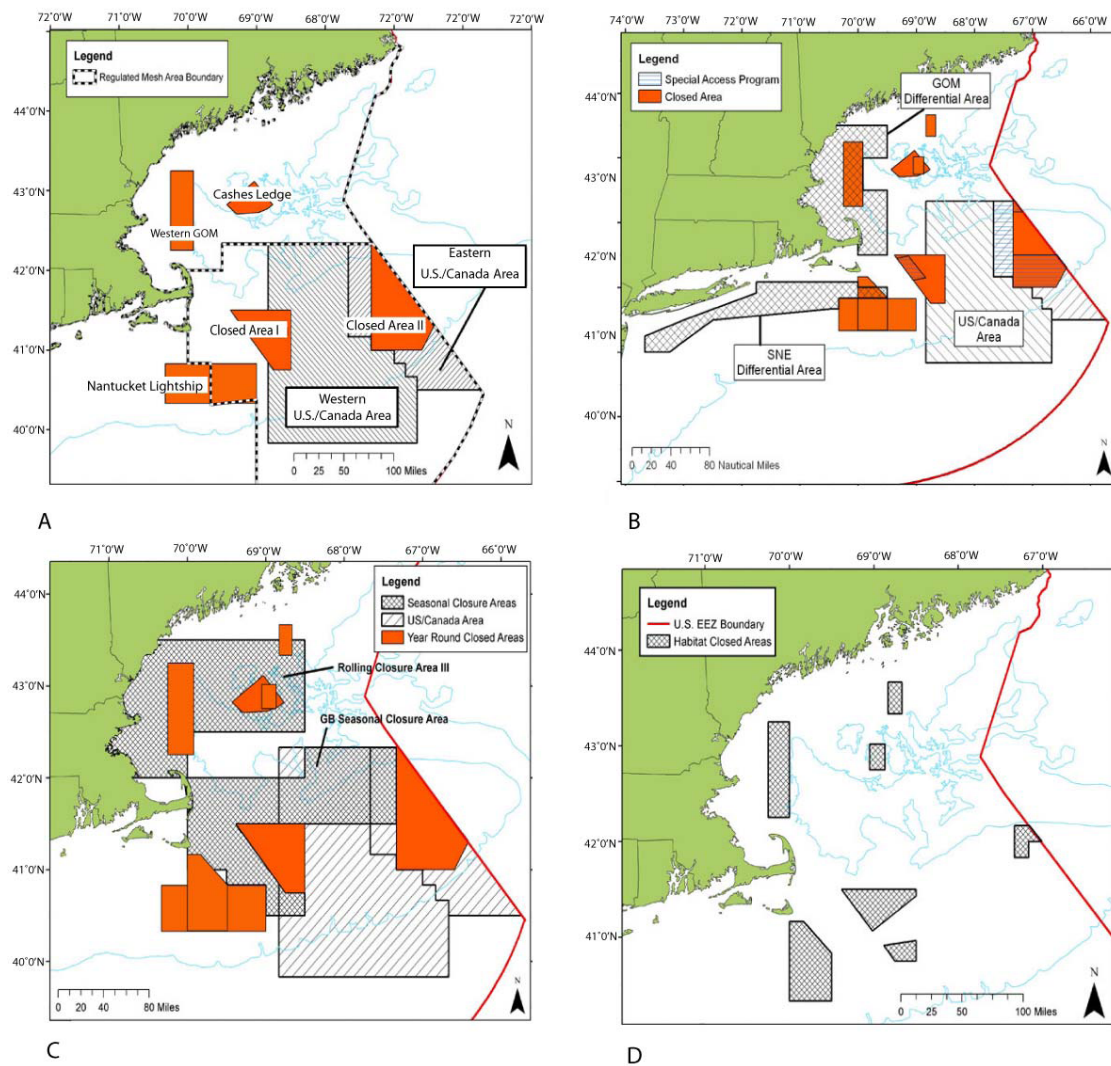
Select areas are closed to some level of fishing to protect the sustainability of fishery resources. The designation of long-term closures has resulted in the removal or reduction of fishing effort from important fishing grounds, with an expected result that fishery-related mortalities to stocks utilizing the closed areas may have been reduced.

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Figure 6 shows the Closed Areas for:

- A. Northeast Multispecies Closed Areas and U.S./Canada Management Area;
- B. Northeast Multispecies Differential Days-at-Sea Areas, Closed Areas, Special Access Programs, and the U.S./Canada Management Area;
- C. Northeast Multispecies May Seasonal Closures Overlaid on Northeast Multispecies Closed Areas and the U.S./Canada area; and
- D. Essential Fish Habitat Closure Areas.

Figure 6 - Northeast Multispecies Closed Areas and United States/Canada



6.2.5 U.S./Canada Fishery Information

U.S./Canada TACs

The U.S. TACs have varied over time due to primarily the change in the percentage shares allocated to the U.S. under the Sharing Understanding and the stock conditions (fishing mortality and biomass status). The stock conditions exert the dominant influence on the size of the TACs, and it should be noted that in some years, there is relatively high scientific uncertainty regarding stock size (see Transboundary Resource Assessment Committee documents). Despite the change in the weighting formula involving current distribution and historic catch from 60/40 to 85/15 (from 2004 through 2009, respectively), the percentage shares have not varied substantially. The U.S. shares of cod and haddock increased, while the share of yellowtail decreased then increased.

Table 16 – U.S./Canada TACs (mt) and Percentage Share by Year

Year	TAC Type	Cod	Haddock	Yellowtail Flounder
2009 85/15	Total Shared TAC	1,700	30,000	2,100
	U.S. TAC	527 (31 %)	11,100 (37 %)	1,617 (77 %)
	Canada TAC	1,173 (69 %)	18,900 (63 %)	483 (23 %)
2008 80/20	Total Shared TAC	2,300	23,000	2,500
	U.S. TAC	667 (29 %)	8,050 (35 %)	** 1,950 (78 %)
	Canada TAC	1,633 (71 %)	14,950 (65 %)	550 (22 %)
2007 75/25	Total Shared TAC	1,900	19,000	1,250
	U.S. TAC	494 (26 %)	6,270 (33 %)	900 (72 %)
	Canada TAC	1,406 (74 %)	12,730 (67 %)	350 (28 %)
2006 70/30	Total Shared TAC	1,700	22,000	3,000
	U.S. TAC	374 (22 %)	7,480 (34 %)	2,070 (69 %)
	Canada TAC	1,326 (78 %)	14,520 (66 %)	930 (31 %)
2005 65/35	Total Shared TAC	1,000	23,000	6,000
	U.S. TAC	260 (26 %)	7,590 (33 %)	4,260 (71 %)
	Canada TAC	740 (74 %)	15,410 (67 %)	1,740 (29 %)
2004 60/40	Total Shared TAC	1,300	15,000	7,900
	U.S. TAC	300 (23 %)	5,100 (34 %)	6,000 (76 %)
	Canada TAC	1,000 (77 %)	9,900 (66 %)	1,900 (24 %)

* Weighting formula: x/y resource distribution/utilization

* * Adjusted downward to 1,868.7 mt due to overharvest of 2007 TAC

U.S. Catch from Shared Stocks

The catch of Eastern GB cod, and haddock, and GB yellowtail flounder have varied due the availability of TAC, pertinent regulations, fish availability, market conditions and other factors. For example, particularly notable is the large FY 2004 catch of GB yellowtail flounder that resulted from the large TAC and the opening of the Closed Area II Yellowtail Flounder Special Access Program. Since 2004, the haddock TAC has not been a limiting factor, whereas access to the eastern U.S./Canada Area was limited multiple times by closures as a result of the projected attainment of the yellowtail and cod TACs. In only one instance has one of the TACs been exceeded. In FY 2007, the GB yellowtail TAC was overharvested

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by 9 percent as a result of late reporting, and relatively slow accounting of yellowtail catch by the scallop fleet (from outside scallop access areas). Since that time, NMFS modified its monitoring to improve the timelines of such data. The methodology of estimating catch and discards is described in detail in an unpublished paper (Caless, Wilhelm and Wang, 2005), as well as in NMFS's annual summary memoranda. Note, for cod and haddock, for trips that fished both inside and outside of the Eastern U.S./Canada Area, in-season monitoring attributed all fish caught on such trips towards the TAC. Because such trips include fish caught both inside and outside of the Eastern U.S./Canada Area, for 2006, the final catch numbers were adjusted downward to reflect only fish caught inside the Eastern Area. All final catch numbers include adjustments made to reflect live weight, as well as adjustments made to account for the discrepancy between vessel monitoring system data and dealer data.

Pursuant to Regional Administrator authority to modify certain measures to optimize catch (neither under-harvest, nor over-harvest the TACs), NMFS has relied upon three management tools: modifications to the cod and yellowtail trip limits, closures to the eastern U.S./Canada Area, and prohibition on the use of flatfish nets. For the 2008 and 2009 fishing years, the Council recommended, and NMFS implemented a delay in the opening of the Eastern U.S./Canada Area for vessels fishing with trawls, in order to avoid trawl fishing during the season when the cod catch rate is usually high.

During FYs 2004-2009 there were several Special Access Programs (SAPs), which provided vessels opportunities to fish in the U.S. Canada Management Area under rules which differed from the generic regulations that apply to the U.S. Canada Management Area. The catch under each of the SAPs (kept and discarded) counted toward the pertinent U.S. TAC specified for each FY (cod, haddock, and yellowtail flounder), and were consistent with the Understanding.

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Table 17 – U.S. Catch from Shared Stocks

Cod				
Fishing Year	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards (% of catch)
2004	300	59 %	177	23 %
2005	260	94 %	244	64 %
2006	374	90 %	335	50 %
2007	494	64 %	315	67 %
2008	667	75 %	501	15 %

Haddock				
Fishing Year	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards (% of catch)
2004	5,100	21 %	1,060	18 %
2005	7,590	8 %	589	12 %
2006	7,480	9 %	671	37 %
2007	6,270	5 %	307	46 %
2008	8,050	20 %	1,649	4 %

Yellowtail Flounder				
Fishing Year	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards* (% of catch)
2004	6,000	98 %	5,852	8 %
2005	4,260	88 %	3,760	9 %
2006	2,070	89 %	1,851	29 %
2007	900	109 %	981	39 %
2008	1,869	82 %	1,531	28 %

* Note; yellowtail discard % includes groundfish and scallop fishery discards

Table 18 – Summary of Numbers of Trips and DAS* in U.S./Canada Management Area

Fishing Year	Trips			Days-at-Sea		
	Total	West	East	Total	West	East
2004	1,910	1,424	468	9,805	7,808	1,997
2005	2,176	1,963	213	14,368	13,287	1,081
2006	1,579	1,295	284	9,282	7,907	1,375
2007	1,272	1,134	138	10,950	10,264	686
2008	1,273	559	714	8,990	4,804	4,186

* A, B regular, and B reserve groundfish DAS,

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Table 19 – Number of Distinct Vessels that Fished in the U.S./Canada Management Area

Fishing Year	Western Area	Eastern Area	East and West
2004	159	110	162
2005	184	78	184
2006	155	92	161
2007	148	59	151
2008	126	92	147

Table 20 – Estimates of Observer Coverage in U.S./Canada Area (percent of trips)

Fishing Year	Approximate Percentage
2006	19 %
2007	26 %
2008	29 %

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Target Species

Table 21 – Canadian Catch from Shared Georges Bank Stocks

Cod				
	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards
2004	1,000	111 %	1,112	unknown
2005	* 640 (740)	98 %	627	unknown
2006	1,326	109 %	1,448	24 %
2007	* 1,275 (1,406)	94 %	1,195	125 mt from scallopers
2008	1,173	94 %	1,529	31 mt from scallopers

* Adjusted downward to account for previous year's overharvest

Haddock				
	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards
2004	9,900	98 %	9,745	unknown
2005	15,410	94 %	14,483	unknown
2006	14,520	83 %	12,054	
2007	12,728	94 %	11,951	61 mt from scallopers
2008 (prelim)	18,900	99 %	14,815	30 mt from scallopers

Yellowtail Flounder				
	TAC (mt)	Catch (% of TAC)	Catch (mt)	Discards
2004	1,900	< 1 %	95	unknown
2005	1,740	< 1 %	29	unknown
2006	930	62 %	580	
2007	350	38 %	132	105 mt from scallopers
2008 (prelim)	483	29 %	158	45 mt from scallopers

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Table 22 – Summary of Georges Bank Yellowtail Flounder Catch by Scallop Fishery (based on NMFS/FSO end of fishing year summary reports for US/CA Area; includes both scallop access area and open areas on GB)

Year	2005	2006	2007	2008	* 2009
Landings	2,000 lb	16,000 lb	1,100 lb	10,000 lb	6,766 (access area)
Discards	470,000 lb	949,000 lb	417,000 lb	475,000 lb (6,575,000 meat lb of scallop X 0.072 discard rate for USCA open access scallop trips)	200,196 (open area) 321,120 (access area)
Total	472,000 lb	966,000 lb	419,000 lb	485,000 lb	528,082
Groundfish GB Yellowtail TAC	9,392,000	4,564,000	1,984,000	4,119,779	3,564,875
% of TAC	5%	21%	21%	12 %	15%

* 2009 data through August 16, 2009;

Table 23 – GB Yellowtail Catch from Scallop Access Fishery (from FSO website)

	Kept	Discarded	Total
2009 CA II Scallop Access Area	6,766 lb	321,120 lb	327,886 lb
2007 CA I Scallop Access Area	501 lb	53,387 lb	53,888 lb
2006 CA II Scallop Access Area	7,470 lb	454, 842 lb	462,312

6.2.6 Interaction between Gear and Target Species

The analysis of interactions between gear and allocated species is based on catch information for the Northeast Multispecies FMP Common Pool fishery from FY 1996 through FY 2006 as presented in GARM III. Historic landings for select target species by gear type from FY 1996 through FY 2006 (Table 24) show that the majority of fish of all species are caught with trawls. 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 Other Species

Species likely to be affected by the multispecies fishery include monkfish, skates, and spiny dogfish. These species have no allocation under the Northeast Multispecies FMP and are managed under separate FMPs. The discussion in this section is limited to these three groups of fish. Monkfish and skates are commonly landed when caught. Monkfish may be discarded when regulations or market conditions constrain the amount of the catch that could be landed. Spiny dogfish, which tend to be relatively abundant in catches, may be landed but are often the predominant component of the discarded bycatch.

6.3.1 Monkfish

Life History: Monkfish, *Lophius americanus*, also called goosfish, are distributed in the western North Atlantic from the Grand Banks and northern Gulf of St. Lawrence south to Cape Hatteras, North Carolina. Monkfish may be found from inshore areas to depths of at least 900 m. Seasonal onshore-offshore migrations occur and appear to be related to spawning and possibly to food availability. Female monkfish begin to mature at age 4, and 50 percent of females are mature by age 5 (about 43 cm). Males mature at slightly younger ages and smaller sizes (50 percent maturity at age 4.2 or 36 cm). Spawning takes place from spring through early autumn, progressing from south to north, with most spawning occurring during the spring and early summer. Females lay a buoyant egg raft or veil which can be as large as 12 m long and 1.5 m wide, and only a few mm thick. The eggs are arranged in a single layer in the veil, and 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 8 cm.

Population Management and Status: Monkfish are currently regulated by the Monkfish FMP, which was implemented in 1999 (NEFMC and MAFMC 1998). The FMP was designed to stop overfishing and rebuild the stocks through a number of measures, including: 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 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.

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Other Species

Table 24 - Historic landings for groundfish species by gear type from Fishing Year 1996 to Fishing Year 2006
in metric tons (mt) as presented in GARM III.

Stock/species	Trawl	Large- mesh trawl discards	Small- mesh trawl discards	Gillnet	Gillnet discards	Hook/ line	Hook/ line discards	Scallop dredge	Scallop dredge discards	Other	Other discards	Total discards	Total landings
Georges Bank Cod		2,742	551						170			2,862	73,806
Georges Bank Haddock	38,989	3,950		883	61	2,461	380		31	297		4,423	42,626
Georges Bank Yellowtail Flounder		1,280	134						2,562			3,976	27,960
So. New England/Mid- Atlantic Yellowtail Flounder		725	129						1,119			1,972	7,968
Gulf of Maine/Cape Cod Yellowtail Flounder		1,123	33		510				944			2,611	15,796
Gulf of Maine Cod	22,435	5,301		17,532	4,036					3,639		9,337	43,606
Witch Flounder		1,911	469								71	2,481	27,031
American Plaice		3,059	1,237								350	4,533	31,031
Gulf of Maine Winter Flounder	4,479	259	54	1,346	163					168		476	5,993
So. New England/Mid- Atlantic Winter Flounder ^a												1,481	31,146
Georges Bank Winter Flounder	18,202	169	47					210	418	135		634	18,546

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Other Species

Stock/species	Trawl	Large-mesh trawl discards	Small-mesh trawl discards	Gillnet	Gillnet discards	Hook/ line	Hook/ line discards	Scallop dredge	Scallop dredge discards	Other	Other discards	Total discards	Total landings
White Hake	22,532			9,355	239					2,191		2,173	32,547
Pollock												N/A	51,568
Acadian Redfish												6,200	4,115
Ocean Pout ^a												5,165	207
Gulf of Maine Haddock	6,396	5	0.49	1,091	1					969	2		8,456
Atlantic Halibut ^a												157	138
Gulf of Maine/Georges Bank Windowpane ^a	1,966	3,584	403	4				3	615	7		4,850	1,978
Southern New England/Mid- Atlantic Windowpane ^a	1,071	1,762	433	3				1	1,004	18		3,197	1,093
Atlantic Wolffish ^b													

Notes:

^a as adopted by the NEFMC June, 2009

^b provisionally added to list of stocks not allocated

6.3.2 Skates

Life History: The seven species in the Northeast Region (Maine to Virginia) 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 most common skate in the Gulf of Maine, on Georges Bank, and in southern New England. In the Northeast Region, the center of distribution for the little and winter skates is Georges Bank and southern New England. The thorny and smooth skates are commonly found in the Gulf of Maine. The clearnose and rosette skates have a more southern distribution, and are found 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, moving offshore in summer and early autumn and returning inshore during winter and spring. Members of the skate family lay eggs that are 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: The Skate FMP was implemented in September 2003 with a primary requirement for mandatory reporting of skate landings by species by both dealers and vessels. Possession prohibitions of barndoor, thorny, and smooth skates in the Gulf of Maine were also provisions of the FMP. A trip limit of 10,000 pounds (lbs) was implemented for winter skate with a Letter of Authorization for the bait fishery (little skate) to exceed the trip limit. Draft Amendment 3 and the Draft Environmental Impact Statement (DEIS) to the Skate FMP updates and supplements the original EIS for the skate fishery and serves as a Stock Assessment and Fishery Evaluation (SAFE) Report (<http://www.nefmc.org/skates/fmp/fmp.htm>).

Skate landings have been reported to be generally increasing since 2000. Due to insufficient information about the population dynamics of skates, there remains considerable uncertainty about the status of skate stocks. The landings and catch limits proposed by Amendment 3 have been reported to 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 is expected to cause skate biomass and future yield to increase.

6.3.3 Spiny Dogfish

Life History: Spiny dogfish, *Squalus acanthias*, are distributed in the western North Atlantic from Labrador to Florida and are considered 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 and 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 80 cm, but can vary from 78 cm to 85 cm depending on the abundance of females.

6.3.3.1 Population Management and Status:

The fishery is managed under a FMP developed jointly by the NEFMC and Mid Atlantic Fishery Management Council (MAFMC) for federal waters and a plan developed concurrently by the Atlantic States Marine Fisheries Commission for state waters. Spawning stock biomass of spiny dogfish declined rapidly in response to a directed fishery during the 1990s. Management

measures, initially implemented in 2001, have been effective in reducing landings and reducing fishing mortality. Overfishing is not presently considered to be occurring. Conclusions regarding the overfished and overfishing status of spiny dogfish are strongly dependent on the Northeast Fisheries Science Center spring survey estimates in 2006. Concerns have been raised about the influence of these data (NEFSC 2006a); future surveys would be closely monitored to determine if the 2006 results signal a true increase in abundance (<http://www.nefsc.noaa.gov/sos/spsyn/op/dogfish/>).

6.3.4 Interaction between Gear and Incidental Catch Species

The analysis of interactions between gear and non-allocated species and by catch is based on catch information for the Northeast Multispecies FMP Common Pool fishery from FY 1996 to FY 2006.

The Final Supplemental Environmental Impact Statement (FSEIS) to Amendment 2 (NEFMC and MAFMC 2003) evaluated the potential adverse effects of gears used in the directed monkfish fishery for monkfish and other federally-managed species and the effects of fishing activities regulated under other federal FMPs on monkfish. The two gears used in the directed monkfish fishery are bottom trawls and bottom gill nets which are described in detail in Section 1.2.1 of Appendix 2 to Amendment 2 to the Monkfish FMP (NEFMC and MAFMC 2003).

Regionally, skates are harvested in two very different fisheries, one for lobster bait and one for wings for food. Vessels tend to catch skates when targeting other species like groundfish, monkfish, and scallops and land them if the price is high enough. Therefore, gear interactions with skate can be expected in the conduct of fishing for groundfish. Detailed information about skate fisheries, gear and conduct can be found in Section 7.6 of the recent NEFMC Amendment to the Skate FMP and accompanying FSEIS (NEFMC 2009b).

Of the non-allocated target species considered in the EA, dogfish have the potential for an interaction with all gear types expected to be used by the groundfish fleet. Historic landings for non-allocated target species from FY 1996 to FY 2007 (Table 25) show that the majority of fish of all species are caught with otter trawls. Only cod and white hake are caught in significant numbers by gillnets. Only haddock are caught in significant numbers by hook and line.

Table 25 - Historic Landings (mt) for other species by gear type from Fishing Year 1996 to Fishing Year 2006^a

Species	Gear Type								
	Trawl		Gillnet		Dredge		Other Gear ^b	Total	
	land	discard	land	discard	land	discard	land	land	discard
Monkfish	122,700	16,520	7,440	6,526	31,555	16,136	8,811	228,000	35,100
Skates	117,381	189,741	29,711	19,448	38,638	--	4,413	151,505	247,827
Dogfish	24,368	61,914	72,712	39,852	--	--	946	98,026	101,766

Notes:

^a monkfish 1997-2006, skates 1996-2006, dogfish 1996-2005

^b discards not available for other gear

Source: Northeast Data Poor Stocks Working Group 2007; Sosebee et al. 2008; NEFSC 2006b.

6.4 Atlantic Sea Scallop Resource

The Atlantic sea scallop, *Placopecten magellanicus* (Gmelin), is a bivalve mollusk ranging from North Carolina to the Gulf of St. Lawrence (Hart and Chute, 2004). Although all sea scallops in the US EEZ are managed as a single stock per Amendment 10, 4 regional components and 6 resource areas are recognized. Major aggregations occur in the Mid-Atlantic from Virginia to Long Island (Mid-Atlantic component), Georges Bank, the Great South Channel (South Channel component), and the Gulf of Maine (Hart and Rago, 2006; NEFSC, 2007). These 4 regional components are further divided into 6 resource areas: Delmarva (Mid-Atlantic), New York Bight (Mid-Atlantic), South Channel, southeast part of Georges Bank, northeast peak and northern part of Georges Bank, and the Gulf of Maine (NEFMC, 2007). Assessments focus on two main parts of the stock and fishery that contain the largest concentrations of sea scallops: Georges Bank and the Mid-Atlantic, which are combined to evaluate the status of the whole stock (NEFMC, 2007).

Sea scallops are generally found in waters less than 20°C and depths that range from 30-110m on Georges Bank, 20-80m in the Mid-Atlantic, and less than 40m in the near-shore waters of the Gulf of Maine. They feed by filtering zoo- and phytoplankton and detritus particles. Sea scallops have separate sexes, reach sexual maturity at age 2, and use external fertilization. Scallops greater than 40mm are considered mature individuals. Spawning generally occurs in late summer and early autumn, although there is evidence of spring spawning as well in the Mid-Atlantic Bight (DuPaul et al., 1989) and limited winter-early spring spawning on Georges Bank (Almeida et al., 1994; Dibacco et al., 1995). Annual fecundity increases rapidly with shell height; individuals younger than 4 years may contribute little to total egg production (MacDonald and Thompson, 1985; NEFMC, 1993; NEFSC, 2007). The pelagic larval stage lasts 4-7 weeks with settlement usually on firm sand, gravel, shells, etc. (Hart and Chute, 2004; NEFMC, 2007; NEFSC, 2007). Recruitment to the NEFSC survey occurs at 40mm shell height (SH) and to the commercial fishery at 90-105mm SH, which corresponds to an age of 4-5 years old (NEFSC, 2007; NEFMC, 2007).

Meat weight can quadruple between the ages of 3 to 5 (NEFSC, 2004; NEFMC, 2007). Meat weight is dependent on shell size, which increases with age, and depth. Meat weight decreases

with depth, possibly due to a reduced food supply (NEFSC, 2007). Both the Mid-Atlantic and Georges Bank showed a drop in meat weights between August and October, coinciding with the September-October spawning period (Haynes, 1966; Serchuk and Smolowitz, 1989; NEFSC, 2007). Meat weight of landed scallops may differ from those predicted based on research survey data because: 1) the shell height/meat weight relationship varies seasonally in part because of the reproductive cycle, causing meats collected during the NEFSC survey in July to differ from the rest of the year; 2) commercial fishers concentrate on speed while shucking, leaving some meat on the shell (Naidu, 1987; Kirkley and DuPaul, 1989); and 3) fishers may target areas with relatively large meat weight at shell height, thus increasing commercial weights compared to those on the research vessel (NEFSC, 2007).

6.4.1 Assessment

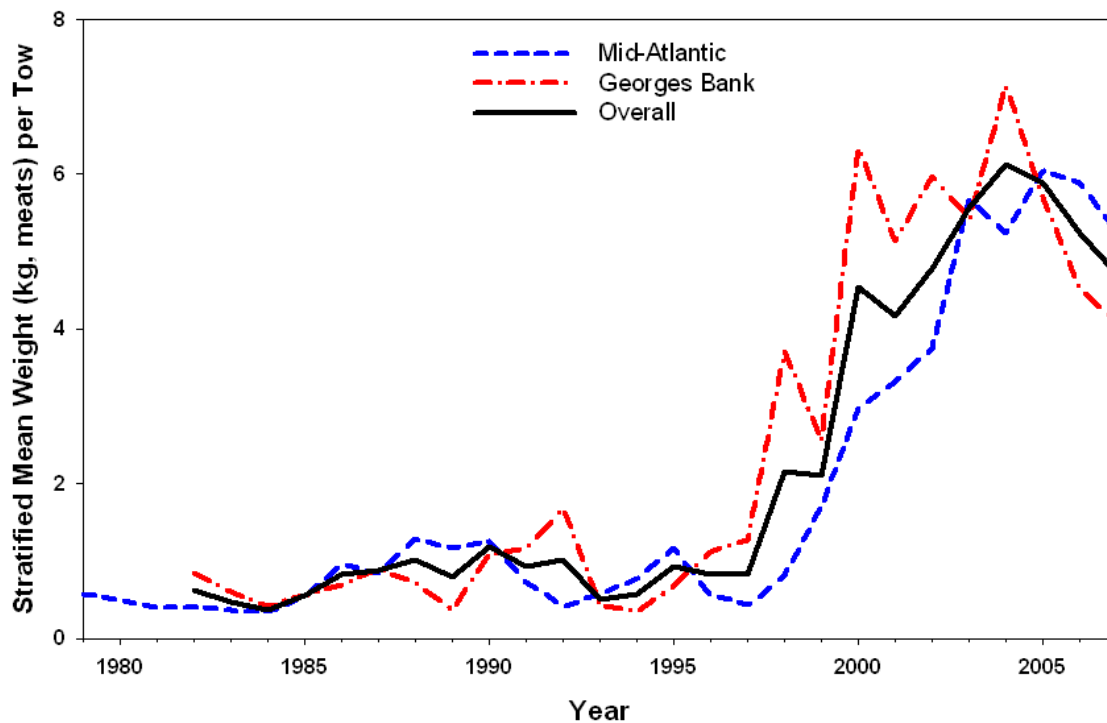
The primary source of data used in the biological component of the scallop assessment currently comes from the federal scallop survey. The scallop dredge survey has been conducted in a consistent manner since 1979. An 8-foot modified scallop dredge is used with 2" rings and a 1.5" liner. Tows are 15 minutes in length at a speed of 3.8 knots, and stations are identified using a random-stratified design. About 500 stations are completed each year on Georges Bank and the Mid-Atlantic. A Scallop Survey Advisory Panel (SSAP) is reviewing the scallop survey and making recommendations about how future surveys should be conducted. The vessel platform used in the past (R/V Albatross IV) went out of service in 2008. The 2008 and 2009 resource surveys were conducted on the R/V Hugh Sharp owned by the University of Delaware. The 2009 surveys were conducted six weeks earlier than previous surveys in hopes that the data would be available in time for 2010 management actions. Calibration tows have been conducted with the WHOI HabCam, in order to use this video survey in future projections.

Other primary components of the assessment include defining parameters for scallop growth, maturity and fecundity, shell height/meat weight relationships, recruitment, and estimates of natural mortality, which are all combined with fishery data (landing and discards) to estimate fishing mortality rates and biological reference points. The per-recruit reference points F_{max} and B_{max} are used by managers as proxies for F_{msy} and B_{msy} because the stock-recruitment relationship is not well defined. The Catch-At-Size-Analysis (CASA) model utilizes additional information including commercial catch, LPUE, commercial shell height compositions, data from the NMFS sea scallop and winter trawl surveys, data from the University of Massachusetts Dartmouth School of Marine Science and Technology (SMAST) small camera video surveys, data from dredge surveys conducted by VIMS, growth increment data from scallop shells, and shell height/meat weight data adjusted to take commercial practices and seasonality into account (NEFSC, 2007).

Based on the results of the last stock assessment workshop, biological reference points have been set for the entire US sea scallop stock. The threshold fishing mortality rate for fully-recruited scallops that generates the maximum yield-per-recruit, F_{max} , was estimated at 0.37. The biomass target is 108.6 thousand mt meats and the recommended biomass threshold is half the biomass target, or 54.3 thousand mt meats.

In general, scallop biomass has increased dramatically in recent years. Figure 7 shows this increase in terms of estimated Mid-Atlantic, Georges Bank and total scallop biomass based on the scallop survey through 2007. These values are unadjusted; therefore cannot be directly compared to biomass thresholds, but the general increasing trend in biomass in both areas is evident.

Figure 7 - Trend in R/V Albatross stratified mean weight per tow from mid 1980s through 2006 by region.



6.4.2 Stock Status

Preliminary results from the Catch at Size Analysis (CASA) model in 2009 estimate an overall fishing mortality of 0.30. Stock status has been fluctuating in recent years. Overall biomass increased almost without interruption since 1997, peaking at 8.2 kg/tow in 2004. Fishing mortality was above the original threshold of 0.24 and target of 0.20 for both 2003 and 2004 with both years at or above 0.30. For 2005, 2006, and 2007, fishing mortality was reduced to 0.22, 0.20, and 0.20 respectively, staying below the threshold value. In 2008 fishing mortality went back up to 0.28, and remained high again in 2009 at 0.30. Thus, it may be found that overfishing is occurring once the updated assessment is completed in 2010. It is therefore likely that a reduction in F of approximately 20% will be needed in 2010.

Additional information on stock status can be found in Framework Adjustment 21 to the Atlantic Sea Scallop Fishery Management Plan (NEFMC 2009b.)

6.5 Protected Resources

There are numerous species that inhabit the environment within the Northeast Multispecies FMP management unit, and that therefore potentially occur in the operations area of the groundfish fishery, that are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA), and are under NMFS' jurisdiction. Fifteen species are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA.

6.5.1 Species Present in the Area

Table 26 lists the species, protected either by the ESA, the MMPA, or both, may be found in the environment that would be utilized by the groundfish fishery.

Table 26 - Species protected under the Endangered Species Act and Marine Mammal Protection Act that may occur in the operations area for the groundfish fishery.

Species	Status
Cetaceans	
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered
Fin whale (<i>Balaenoptera physalus</i>)	Endangered
Sei whale (<i>Balaenoptera borealis</i>)	Endangered
Blue whale (<i>Balaenoptera musculus</i>)	Endangered
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected
Northern bottlenose whale (<i>Hyperoodon ampullatus</i>)	Protected
Beaked whale (<i>Ziphius and Mesoplodon spp.</i>)	Protected
Pygmy or dwarf sperm whale (<i>Kogia spp.</i>)	Protected
Pilot whale (<i>Globicephala spp.</i>)	Protected
False killer whale (<i>Pseudorca crassidens</i>)	Protected
Melonheaded whale (<i>Peponocephala electra</i>)	Protected
Rough-toothed dolphin (<i>Steno bredanensis</i>)	Protected
Risso's dolphin (<i>Grampus griseus</i>)	Protected
White-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected
Common dolphin (<i>Delphinus delphis</i>)	Protected
Spotted and striped dolphins (<i>Stenella spp.</i>)	Protected
Bottlenose dolphin (<i>Tursiops truncatus</i>) ^a	Protected
White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)	Protected
Harbor Porpoise (<i>Phocoena phocoena</i>)	Protected

Table 26 (continued) Species protected under the Endangered Species Act and Marine Mammal Protection Act that may occur in the operations area for the groundfish fishery.	
Species	Status
Sea Turtles	
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered
Green sea turtle (<i>Chelonia mydas</i>)	Endangered ^b
Loggerhead sea turtle (<i>Caretta caretta</i>)	Threatened
Fish	
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered
Atlantic salmon (<i>Salmo salar</i>)	Endangered
Pinnipeds	
Harbor seal (<i>Phoca vitulina</i>)	Protected
Gray seal (<i>Halichoerus grypus</i>)	Protected
Harp seal (<i>Pagophilus groenlandicus</i>)	Protected
Hooded seal (<i>Cystophora cristata</i>)	Protected

Note:

^a Bottlenose dolphin (*Tursiops truncatus*), Western North Atlantic coastal stock is listed as depleted.

^b 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 occurring in U.S. waters.

Two additional species of pinnipeds: Ringed seal (*Phoca hispida*) and the Bearded seal (*Erignathus barbatus*) are listed as candidate species under the ESA. The Northeastern U.S. is at the southern tip of the habitat range for both of these species. These species are rarely sighted off the northeastern U.S., although a few stranding records have been recorded in the Northeast Region, but sightings are rare in the Northeast Atlantic.

6.5.2 Species Potentially Affected

It is expected that the sea turtle, cetacean, and pinniped species discussed below have the potential to be affected by the operation of the multispecies fishery. Background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and longline types) can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Marine Turtle Expert Working Group (TEWG) 1998, 2000; NMFS and USFWS 2007a, 2007b; Leatherback TEWG 2007), 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. 2006; 2007), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002).

6.5.2.1 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. In general, turtles 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). The trend is reversed in the fall as water temperatures cool. By December, turtles have passed Cape Hatteras, returning 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 are typically observed as far north as Cape Cod whereas the more cold-tolerant leatherbacks are observed 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>).

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).

6.5.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2009) reviewed the current population trend for each of these cetacean species within U.S. EEZ waters, as well as providing information on the estimated annual human-caused mortality and serious injury, and a description of the commercial fisheries that interact with each stock in the U.S. Atlantic. Information from the SAR is summarized below.

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, and low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2009). 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 on the east coast of Canada, particularly in the Gulf of St. Lawrence, and occurs only infrequently within the U.S. EEZ (Waring et al. 2002).

In comparison to the baleen whales, sperm whale distribution occurs more on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2006). However, sperm whales distribution in U.S. EEZ waters also occurs in a distinct seasonal cycle

(Waring et al. 2006). Typically, sperm whale distribution is 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).

For North Atlantic right whales, the available information suggests that the population is increasing at a rate of 1.8 percent per year during 1990-2003, and the total number of North Atlantic right whales is estimated to be at least 323 animals in 2003 (Waring et al. 2009). The minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.8 per year during 2002 to 2006 (Waring et al. 2009). Of these, 1.4 per year resulted from fishery interactions. Recent mortalities included six female right whales, including three that were pregnant at the time of death (Waring et al. 2009).

The North Atlantic population of humpback whales is estimated to be 11,570, although the estimate is considered to be negatively biased (Waring et al. 2009). The best estimate for the Gulf of Maine stock of humpback whales is 847 whales (Waring et al. 2009). The population trend was considered positive for the Gulf of Maine population, but there are insufficient data to estimate the trend for the larger North Atlantic population. Based on data available for selected areas and time periods, the minimum population estimates for other western north Atlantic whale stocks are 2,269 fin whales, 207 sei whales, 4,804 sperm whales, and 3,312 minke whales (Waring et al. 2009). No recent estimates are available for blue whale abundance. Insufficient data exist to determine trends for any other large whale species.

The ALWTRP was recently revised with publication of a new final rule (72 FR 57104, October 5, 2007) that is intended to continue to address entanglement of large whales (right, humpback, fin, and minke) in commercial fishing gear and to reduce the risk of death and serious injury from entanglements that do occur.

6.5.2.3 Small Cetaceans

Numerous small cetacean species (dolphins; pygmy and dwarf sperm whales; pilot and beaked, whales; and the harbor porpoise) occur within [the area from Cape Hatteras through the Gulf of Maine]. Seasonal abundance and distribution of each species in [Mid-Atlantic, Georges Bank, and/or Gulf of Maine] waters varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white sided dolphins, harbor porpoise), while others are found primarily in continental shelf edge and slope waters (e.g., Risso's dolphin), and still others occupy all three habitats (e.g., common dolphin, spotted dolphins, striped dolphins). Information on the western North Atlantic stocks of each species is summarized in Waring et al. (2009).

6.5.2.4 Pinnipeds

Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona et al. 1993, Waring et al. 2009). Gray seals are the second most common seal species in U.S. EEZ waters, occurring primarily in New England (Katona et al. 1993; Waring et al. 2009). Pupping for both species occurs in both U.S. and Canadian waters of the western north Atlantic with the majority of harbor seal pupping likely occurring in U.S. waters and the majority of gray seal pupping in Canadian waters, although there are at least three gray seal pupping colonies in U.S. waters as well. Harp

and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring, and 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 (Waring et al. 2009).

6.5.2.5 Species Not Likely to be Affected

NMFS has determined that the action being considered in the 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. Shortnose sturgeon and salmon belonging to the Gulf of Maine DPS of Atlantic salmon occur within the general geographical areas fished by the multispecies fishery, but they are unlikely to occur in the area where the fishery operates given their numbers and distribution. Therefore, none of these species are likely to be affected by the groundfish fishery. The following discussion provides the rationale for these determinations. Although there are additional species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the groundfish fleet, impacts to these species are still considered due to their range and similarity of behaviors to species that have been adversely affected.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. Shortnose sturgeon can be found in rivers along the western Atlantic coast from St. Johns River, Florida (although the species is possibly extirpated from this system), to the Saint John River in New Brunswick, Canada. 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 the groundfish fishery would not operate in or near the rivers where concentrations of shortnose sturgeon are most likely found, it is highly unlikely that the fishery would affect shortnose sturgeon.

The wild populations of Atlantic salmon found in rivers and streams from the lower Kennebec River north to the U.S. - Canada border are listed as endangered under the ESA. These populations include those in the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot Rivers and Cove Brook. Juvenile salmon in New England rivers typically migrate to sea in May after a 2- to 3-year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn. Results from a 2001 post-smolt trawl survey in Penobscot Bay and 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. 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 approval of this EA would affect the Gulf of Maine DPS of Atlantic salmon given that operation of the groundfish fishery would not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found and groundfishing gear used by the fleet operates in the ocean at or near the bottom rather than near the water surface. Thus, this species is not 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). Since operation of the multispecies fishery would not occur in waters that are typically used by hawksbill sea turtles, it is highly unlikely that its operations would affect this turtle species.

Blue whales do not regularly occur in waters of the U.S. EEZ (Waring et al. 2009). In the North Atlantic, blue whales are most frequently sighted in the St. Lawrence from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program (CeTAP) surveys of the mid- and north Atlantic areas of the outer continental shelf (CeTAP 1982). Calving for the species occurs in low latitude waters outside of the area where the groundfish fishery operates. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. Given that the species is unlikely to occur in areas where the groundfish fishery operates, and given that the operation of the fishery would not affect the availability of blue whale prey or areas where calving and nursing of young occurs, the Proposed Action would not be likely to adversely affect blue whales.

Unlike blue whales, sperm whales do regularly occur in waters of the EEZ. However, the distribution of the sperm whales in the EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2006). In contrast, the multispecies fishery would operate in continental shelf waters. The average depth of sperm whale sightings observed during the CeTAP surveys was 1792 m (CeTAP 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 1000 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). Given that sperm whales are unlikely to occur in areas (based on water depth) where the groundfish fishery would operate, and given that the operation of the fishery would not affect the availability of sperm whale prey or areas where calving and nursing of young occurs, the Proposed Action would not be likely to adversely affect sperm whales.

Although large whales and marine turtles may be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery would not have any adverse effects on the availability of prey for these species. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The multispecies fishery would not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that would 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 (e.g., sand lance, herring, 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 versus schooling fish such as herring and mackerel that occur within the water column. Therefore, the continued authorization of the multispecies fishery would not affect the availability of prey for foraging humpback or fin whales. Moreover, none of the turtle species are known to feed upon groundfish.

6.5.3 Interactions Between Gear and Protected Resources

Commercial fisheries are categorized by NMFS 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 stock. The system is based on the numbers of animals per year that incur incidental mortality or serious injury due to commercial fishing operations relative to a stock's Potential Biological Removal (PBR) level (the

maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population). Tier 1 takes into account the cumulative mortality and serious injury to marine mammals caused by commercial fisheries while Tier 2 considers marine mammal mortality caused by the individual fisheries; Tier 2 classifications are used in this EA to indicate how each type of gear proposed for use in the Proposed Action may affect marine mammals (NMFS 2009b). Table 27 identifies the classifications used in the List of Fisheries (LOF) proposed for FY 2010 (50 CFR 229), which are broken down into Tier 2 Categories I, II, and III).

Table 27 – Descriptions of the Tier 2 Fishery Classification Categories

Category	Category Description
Tier 2, 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 potential biological removal (PBR) level.
Tier 2, 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.
Tier 2, 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: <ul style="list-style-type: none"> 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 unintentional interactions with fishing gear. 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. Large and small cetaceans and sea turtles are more prevalent within the operations area during the spring and summer, although they are also relatively abundant during the fall and would have a higher potential for interaction with groundfish vessels 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 the winter.

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Although interactions between deployed gear and protected species would vary, interactions generally include becoming caught on hooks (longlines), entanglement in mesh (gillnets and trawls), entanglement in the float line (gillnets and trawls), entanglement in the groundline (gillnets, trawls, and longlines), entanglement in anchor lines (gillnets and longlines), or entanglement in the vertical lines that connect gear to the surface and surface systems (gillnets, trawls, and longlines). Entanglements are assumed to occur with increased frequency in areas where more gear is set and in areas with higher concentrations of protected species.

Table 28 lists the marine mammals known to have had interactions with sink gillnets, bottom trawls, and bottom longlines within the Gulf of Maine and Georges Bank, as excerpted from the proposed LOF for FY 2010 (also see Waring et al. 2009). Northeast sink gillnets have the greatest potential for interaction with protected resources, followed by bottom trawls. Impacts to protected resources through interaction with bottom longline gear are not known within the operations area; 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 28 – Marine Mammals Impacts Based on Groundfishing Gear and Northeast Multispecies Fishing Areas (Based on 2010 List of Fisheries)

Fishery		Estimated Number of Vessels/Persons	Marine Mammal Species and Stocks Incidentally Killed or Injured
Category	Type		
Tier 2, Category I	Mid-Atlantic gillnet	7,596	Bottlenose dolphin, western north Atlantic (WNA), coastal ^a Bottlenose dolphin, WNA, offshore Common dolphin, WNA Gray seal, WNA Harbor porpoise, Gulf of Maine(GOM)/Bay of Fundy(BOF) Harbor seal, WNA Harp seal, WNA Humpback whale, GOM Long-finned pilot whale, WNA Minke whale, Canadian east coast Short-finned pilot whale, WNA White-sided dolphin, WNA
Tier 2, Category I	Northeast sink gillnet	>6,455	Bottlenose dolphin, WNA, offshore Common dolphin, WNA Fin whale, WNA Gray seal, WNA Harbor porpoise, GOM/BOF ^a 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

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Fishery		Estimated Number of Vessels/Persons	Marine Mammal Species and Stocks Incidentally Killed or Injured
Category	Type		
Tier 2, Category II	Mid-Atlantic bottom trawl	>1,000	Common dolphin, WNA ^a Long-finned pilot whale, WNA ^a Short-finned pilot whale, WNA ^a White-sided dolphin, WNA ^a
	Northeast bottom trawl	1,600	Common dolphin, WNA Gray seal, WNA ^b Harbor porpoise, GOM/BF Harbor seal, WNA Harp seal, WNA Long-finned pilot whale, WNA Short-finned pilot whale, WNA White-sided dolphin, WNA ^a Fin whale, WNA ^d Humpback whale, GOM
	Atlantic mixed species trap/pot ^c	>429	
Tier 2, Category III	Northeast/Mid- Atlantic bottom longline/hook- and-line	46	None documented in recent years

To minimize potential impacts to certain cetaceans, multispecies fishing vessels would be required to adhere to measures in the ALWTRP, which was developed to reduce the incidental take of large whales, specifically the right, humpback, fin, and minke whales in specific Category I or II commercial fishing efforts that utilize traps/pots and gillnets. The ALWTRP calls for the use of gear markings, area restrictions, and use of weak links, and neutrally buoyant groundline. Fishing vessels would be required to implement the ALWTRP in all areas where gillnets were used. In addition, the HPTRP would be implemented in the Gulf of Maine to reduce interactions between the harbor porpoise and gillnets; the HPTRP implements gear specifications, seasonal area closures, and in some cases, the use of pingers (acoustic devices that emit a loud sound) to deter harbor porpoises, and other marine mammals, from approaching the nets.

Although sea turtles have been caught and injured or killed in multiple types of fishing gear, including gillnets and hook and line fishing, mortalities from these gear types account for only about 50 percent of the mortalities associated with trawling gear (NMFS 2009c). 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). Sea turtles generally occur in more temperate waters than those in the Northeast multispecies area. Gillnets are considered more detrimental to marine mammals such as pilot whales, dolphins, porpoises, and seals, as well as large marine whales; however, protection for marine mammals would be provided through various Take Reduction Plans outlined above.

6.6 Human Communities/Social-Economic Environment

This EA considers changes to the multispecies FMP and evaluates the effect such changes may have on people's way of life, traditions, and community. These "social impacts" may be driven by changes in fishery flexibility, opportunity, stability, certainty, safety, and/or other factors. Although it is possible that social impacts would be solely experienced by individual fishery participants, it is more likely that impacts would be experienced across communities, gear cohorts, and/or vessel size classes.

The remainder of this section reviews the Northeast multispecies fishery and describes the human communities potentially impacted by the Proposed Action. This includes a description of the fishery participants as well as their homeports.

6.6.1 Overview of New England Groundfish Fishery

New England's fishery has been identified with groundfishing 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 related primarily to cod and haddock. The Northeast Multispecies FMP (large-mesh and small-mesh) includes a total of 13 large-mesh 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 Atlantic wolffish) harvested from three geographic areas (Gulf of Maine, Georges Bank, and Mid-Atlantic Bight/southern New England) representing twenty 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 shore-side 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.

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.

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. Foreign effort levels remained elevated until the passage of the Magnuson Fishery Conservation and Management Act in 1976. Early in this time period, landings of the principal groundfish (cod, haddock, pollock, hake, and redfish) peaked at about 650,000 tons. However, by the 1970's, landing decreased sharply to between 200,000 and 300,000 tons as the previously virgin GB stocks were exploited (NOAA 2007).

The exclusion of the foreign fishermen in 1976, coupled with technological advances 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 continued to trend downward from about 200,000 tons to about 100,000 tons through the mid 1980s (NOAA 2007).

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Human Communities/Social-Economic Environment

In 1986, NEFMC implemented the Northeast Multispecies FMP with the goal of rebuilding stocks. From that time, 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, landing decreased throughout the latter part of the 1980s until reaching a more or less constant level of around 40,000 tons annually since the mid 1990's.

In 2004, the final rule implementing Amendment 13 to the FMP allowed for self-selected groups of limited access groundfish permit holders to form sectors. These sectors develop a legally binding operations plan and operate under an Annual Catch Entitlement (ACE) – a quota that limits catch. The 2004 rule also authorized implementation of the first sector, the Georges Bank Cod Hook Sector and in 2006 a second sector, the Georges Bank Cod Fixed Gear Sector, was authorized. While approved sectors are subject to general requirements specified in Amendment 16 in exchange for operating under an ACE, sector members are exempt from DAS and some of the other effort control measures that tended to limit the flexibility of fishermen.

Through Amendment 16, NEFMC sought to rewrite groundfish sector policies with a scheduled implementation date of May 1, 2009. When that implementation date was delayed until FY 2010, the NMFS Regional Administrator announced that, in addition to a previously announced 18 percent reduction in DAS, interim rules would be implemented to reduce fishing mortality during FY 2009. 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 a reduction in some groundfish allocations (NOAA 2009a).

In 2007, the Northeast multispecies fishery included 2,515 permits, about 1,500 of which are limited access, and about 690 active fishing vessels. Those vessels include a range of gear types including hook, bottom longline, gillnet, and trawlers (NEFMC 2009a). In FY 2009, between 40 and 50 of these vessels were members of the Georges Bank Cod Sectors. The remaining vessels were Common Pool groundfishing vessels.

There are over 100 communities that are homeport to one or more Northeast groundfishing vessels. These ports are distributed throughout the coastal northeast and in New Jersey. Vessels from these ports pursue stocks in three geographic regions: Gulf of Maine, Georges Bank, and southern New England. In 2007, the estimated dockside value of these groundfish landings was less than \$60 million and represented approximately ½ of the total revenue received on trips where groundfish were landed.

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 an important alternative occupation in these port areas, tourism, is largely seasonal.

There is little hard socio-economic data upon which to evaluate the regional or 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. The perceived importance of these economic interrelationships is reflected by the creation of the Cape Cod regional competitiveness council, government recommendations that NEFMC begin compiling the data necessary to evaluate the importance of the fishery to the regional economy,

and the inclusion of social and economic impact analysis in the NEFMC research priorities and data needs 2009-2013.

6.6.2 Multispecies Fleet Home Ports

Each of these ports is described below (in alphabetic order). The primary source of information for these descriptions is the Community Profiles for Northeast US Fisheries, by NEFSC (2009). Please refer to the source documents for a list of references as all of the in-text citations in this section are implied to be 'as cited in' NEFSC (2009).

6.6.2.1 Boston, Massachusetts

The City of Boston (42.35° N, 71.06° W) is the capital of Massachusetts, and is located in Suffolk County. Boston Harbor opens out onto Massachusetts Bay (USGS 2008). The city covers a total of 89.6 square miles, of which only 48.4 square miles (54 percent) is land.

6.6.2.1.1 History

The City of Boston has been an important port since its founding in 1630. Early on, it was the leading commercial center in the colonies (Banner 2005) and its economy was based on fishing, shipbuilding, and trade in and out of Boston Harbor. After the Revolutionary War, Boston became one of the wealthiest international ports in the world, exporting products such as rum, tobacco, fish, and salt (Lovestead 1997). Once an important manufacturing center, with many factories and mills based along Boston's numerous rivers and in the surrounding communities, many of the manufacturing jobs began to disappear around the early 1900s, as factories moved to the South. These industries were quickly replaced, however, by banking, financing, retail, and healthcare, and Boston later became a leader in high-tech industries (Banner 2005). The city remains the largest in New England and an important hub for shipping and commerce, as well as being an intellectual and educational hub. The Boston Fish Pier, located on the South Boston waterfront, has been housing fishermen for almost a century, and is the oldest continuously operating fish pier in the United States (BHA No Date) and home to the nation's oldest daily fish auction.

6.6.2.1.2 Commercial Fishing

More than 11,500 tons of fish are processed at the Fish Pier each year, of which 4,000 tons come from the 12 to 15 fishing vessels that dock there (BHA 2004). The landings show that large-mesh groundfish were the most valuable fishery in Boston, followed by monkfish and lobster (Table 29). While the value of landings in the multispecies fishery was less in 2006 than the 1997-2006 average, the value of both lobster and monkfish to Boston fishermen increased.

There are far more vessels with their homeport in Boston than there are vessel owners in Boston, indicating that most fishermen docked in Boston Harbor live elsewhere (Table 30). The landings values for both homeport and landed port varied over the period from 1997 to 2006, with no significant pattern. The landed port value exceeded the homeport value in every year, meaning some fishermen come from elsewhere to land their catch here.

Table 29 – Dollar value of Federally managed groups landed in Boston

Federal Group	Rank Value of Average Landings from 1997-2006^d
Large-mesh Groundfish ^a	1
Monkfish	2
Lobster	3
Other ^b	4
Squid, Mackerel, Butterfish	5
Skate	6
Scallop	7
Herring	8
Summer Flounder, Scup, Black Sea Bass	9
Small-mesh Groundfish ^c	10
Bluefish	11
Dogfish	12
Tilefish	13

Notes:

- ^a Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.
- ^b "Other" species includes any species not accounted for in a federally managed group.
- ^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).
- ^d Only rank value is provided because value information is confidential in ports with fewer than three vessels or fewer than three dealers, or where one dealer predominates in a particular species and would therefore be identifiable.

Table 30 – Commercial Fishing Trends in Boston

Year	Number of vessels with Boston homeport	Number of vessels whose owner receives mail in Boston
1997	66	16
1998	49	10
1999	45	8
2000	37	10
2001	42	9
2002	45	9
2003	42	9
2004	43	9
2005	46	8
2006	46	7

6.6.2.2 Cundy's Harbor, Maine

The Village of Cundy's Harbor (44.40° N, 69.89° W) is located on Casco Bay within the town of Harpswell, in Cumberland County, Maine. The town of Harpswell is made up of a 10-mile peninsula extending into Casco Bay. It also includes three large islands, Bailey Island, Orr Island, and Great (Sebascodegan) Island, and over 200 small islands, creating over 216 miles of coastline for the town (TPL 2007). Cundy's Harbor is located on the tip of Great Island (USGS 2008).

6.6.2.2.1 History

The town of Harpswell is geographically spread out, and is divided into five main villages: Cundy's Harbor, Harpswell, South Harpswell, Bailey Island, and Orr's Island. Cundy's Harbor is the oldest lobstering community in Maine (TPL 2007). Harpswell was incorporated as a town in 1758, under what was then the Massachusetts Bay Colony. Many tall ships, sloops, and schooners were built here during the 1800s, and fishing has been an important economic activity for the town for centuries. Today the town is often considered to have three populations: commuters, who reside here but work in Portland, Bath, or Brunswick; retirees who have moved to Harpswell; and "working townfolk," many of whom earn their income from fishing (Hall-Arber et al. 2001).

6.6.2.2.2 Commercial Fishing

There are multiple commercial wharves here including Cundy's Harbor, Holbrook's, Hawkes, Mill's Ledge Seafood, Watson's, and Oakhurst Island. Overall, lobster dominates the landings in Cundy's Harbor, worth more than \$2.5 million in 2006 (Table 31). Landings in the "Other" species grouping were also significant, with the 10-year average greater than the 2006 value. The level of landings in Cundy's Harbor overall varied during this time period between about \$1.5 million and over \$3.4 million, with no discernible pattern (Table 32). The level of homeport fishing for Cundy's Harbor was consistently lower than the level of landings here overall, indicating that fishermen from other harbors land their catch there. The level of fishing for homeported values was also variable. The number of homeported vessels in Cundy's Harbor showed somewhat of a declining trend from 1997 to 2006, while the number of vessels with owners living in Cundy's Harbor declined sharply, from 11 in 1997 to three in 2006.

Table 31 – Commercial Fishing Trends in Cundy’s Harbor

Year	Number of vessels with Cundy’s Harbor homeport	Number of vessels whose owner receives mail in Cundy’s Harbor	Value of landings among vessels homeported in Cundy’s Harbor ^a	Value of fisheries landed in Cundy’s Harbor ^a
1997	28	11	\$2,053,625	\$2,595,709
1998	21	7	\$1,611,016	\$1,577,290
1999	21	6	\$1,343,196	\$3,248,354
2000	17	3	\$1,361,446	\$3,329,120
2001	20	2	\$1,371,412	\$2,636,583
2002	25	2	\$2,029,047	\$1,797,178
2003	21	1	\$1,849,415	\$2,191,411
2004	19	2	\$1,676,130	\$3,230,312
2005	19	2	\$2,573,070	\$3,479,115
2006	20	3	\$2,708,258	\$3,206,997

Note:

^a All values are reported in nominal U.S. dollars.

Table 32 – Dollar Value of Federally Managed Groups Landed in Cundy’s Harbor

Federal Group	Average from 1997-2006 ^d	2006 only ^d
Lobster	\$2,088,171	\$2,512,267
Other ^a	\$500,190	\$385,155
Large-mesh Groundfish ^b	\$109,930	\$285,239
Monkfish	\$26,098	\$17,655
Herring	\$3,671	\$0
Dogfish	\$667	\$6,667
Scallop	\$380	\$0
Skate	\$106	\$0
Small-mesh Groundfish ^c	\$12	\$0
Squid, Mackerel, Butterfish	\$1	CONFIDENTIAL

Notes:

^a “Other” species includes any species not accounted for in a federally managed group.

^b Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.

^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

^d All values are reported in nominal U.S. dollars.

6.6.2.3 Gloucester, Massachusetts

The City of Gloucester (42.62°N, 70.66°W) is located on Cape Ann, along the northern coast of Massachusetts in Essex County. It is 30 miles northeast of Boston and 16 miles northeast of Salem. The area encompasses 41.5 square miles of territory, of which 26 square miles is land (USGS 2008).

6.6.2.3.1 History

The history of Gloucester has revolved around the fishing and seafood industries since its settlement in 1623. By the mid 1800s, Gloucester was regarded by many to be the largest fishing port in the world. The construction of memorial statues and an annual memorial to fishermen demonstrates that the historic death tolls in commercial fisheries are still in the memory of the town's residents. The town is well-known as the home of Gorton's frozen fish packaging company, the nation's largest frozen seafood company. As in many communities, after the U.S. passed the Magnuson Fishery Conservation and Management Act of 1976 and foreign vessels were prevented from fishing within the EEZ, Gloucester's fishing fleet soon increased -- only to decline with the onset of major declines in fish stocks and subsequent strict catch regulations. For more detailed information regarding Gloucester's history, see Hall-Arber et al. (2001).

6.6.2.3.2 Commercial Fishing

Although there are threats to the future of Gloucester's fishery, the fishing industry remains strong in terms of recently reported landings. Gloucester's commercial fishing industry had the 13th highest landings in the U.S. (over 39,000 tons) and the nation's ninth highest landing value in 2002 (\$41.2 million). Gloucester's federally managed group with the highest landed value was large-mesh groundfish worth nearly \$20 million in 2006 (Table 33). Lobster landings were second in value, bringing in more than \$10 million in 2006, a significant increase from the 1997-2006 average value of just over \$7 million. Monkfish and herring were also valuable species; both had more valuable landings in 2006 than the 10-year average value. The number of vessels homeported (federal) decreased slightly from 1997 to 2006 (Table 34).

Table 33 – Dollar value of Federally managed groups landed in Gloucester

Federal Group	Average from 1997-2006^d	2006 only^d
Large-mesh Groundfish ^a	\$17,068,934	\$19,577,975
Lobster	\$7,036,231	\$10,179,221
Monkfish	\$3,556,840	\$4,343,644
Other ^b	\$3,246,920	\$1,906,551
Herring	\$3,127,523	\$5,623,383
Squid, Mackerel, Butterfish	\$1,065,567	\$3,692,506
Scallop	\$735,708	\$1,113,749
Small-mesh Groundfish ^c	\$732,353	\$254,287
Dogfish	\$375,972	\$316,913
Skate	\$63,488	\$27,334
Tilefish	\$52,502	\$245,398
Surf Clams, Ocean Quahog	\$29,033	\$77,805
Bluefish	\$21,672	\$18,116
Summer Flounder, Scup, Black Sea Bass	\$1,286	\$603

Notes:

^a Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.

^b "Other" species includes any species not accounted for in a federally managed group.

^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

^d All values are reported in nominal U.S. dollars.

Table 34 – Commercial Fishing Trends in Gloucester

Year	Number of vessels with Gloucester homeport	Number of vessels whose owner receives mail in Gloucester	Value of landings among vessels homeported in Gloucester^a	Value of fisheries landed in Gloucester^a
1997	123	49	\$14,260,267	\$43,219,804
1998	104	43	\$11,898,155	\$35,203,041
1999	116	47	\$14,781,969	\$42,393,247
2000	115	43	\$16,486,230	\$45,434,740
2001	109	39	\$15,488,517	\$34,356,660
2002	107	40	\$15,208,020	\$40,396,946
2003	114	40	\$15,478,904	\$28,892,963
2004	111	38	\$17,763,527	\$34,690,050
2005	111	43	\$18,051,059	\$34,613,266
2006	104	44	\$13,255,702	\$27,825,058

Note:

^a All values are reported in nominal U.S. dollars.

6.6.2.4 New Bedford, Massachusetts

New Bedford is the fourth largest city in Massachusetts. It is situated on Buzzards Bay, located in the southeastern section of the state in Bristol County. The city is 54 miles south of Boston (State of Massachusetts 2006), and has a total area of 24 square miles, of which about 4 square miles (16.2 percent) is water (USGS 2008).

6.6.2.4.1 History

Settled in 1652, a New Bedford fishing community was established in 1760. The port focused largely on whaling until the discovery of petroleum decreased the demand for sperm oil in the mid- to late 1800's. At that time, New Bedford began to diversify its economy, by expanding the focus of the fishing fleet, and focusing on the manufacture of textiles until the southeast cotton boom in the 1920s.

Since then, New Bedford has continued to diversify, but the city is still a major commercial fishing port (USGenNet 2006) consistently ranked among the top two ports in the U.S. for landed value. One factor complicating further development of the New Bedford harbor area is its listing by U.S. EPA as a superfund site due to the presence of metals, organic compounds, and PCBs.

6.6.2.4.2 Commercial Fishing

The number of commercial fishing vessels homeported in New Bedford increased from 244 in 1997 to 273 in 2006 as fishermen moved to New Bedford to take advantage of commercial fishing infrastructure. Concurrent with this increase in homeported vessels, the value of fishing for homeport vessels more than doubled from \$80 million to \$184 million from 1997 to 2006 and the value of New Bedford landings increased to \$281 million (Table 35). However, over that same time the value of groundfish landings decreased approximately 20 percent (Table 36).

Table 35 – Commercial Fishing Trends in New Bedford

Year	Number of vessels with New Bedford homeport	Number of vessels whose owner receives mail in New Bedford	Value of landings among vessels homeported in New Bedford ^a	Value of fisheries landed in New Bedford ^a
1997	244	162	\$80,472,279	\$103,723,261
1998	213	137	\$74,686,581	\$94,880,103
1999	204	140	\$89,092,544	\$129,880,525
2000	211	148	\$101,633,975	\$148,806,074
2001	226	153	\$111,508,249	\$151,382,187
2002	237	164	\$120,426,514	\$168,612,006
2003	245	181	\$129,670,762	\$176,200,566
2004	257	185	\$159,815,443	\$206,273,974
2005	271	195	\$200,399,633	\$282,510,202
2006	273	199	\$184,415,796	\$281,326,486

Note:

^a All values are reported in nominal U.S. dollars.

Table 36 – Dollar value of Federally managed groups landed in New Bedford

Federal Group	Average from 1997-2006 ^d	2006 only ^d
Scallop	\$108,387,505	\$216,937,686
Large-mesh Groundfish ^a	\$30,921,996	\$23,978,055
Monkfish	\$10,202,039	\$8,180,015
Surf Clams, Ocean Quahog	\$7,990,366	\$9,855,093
Lobster	\$4,682,873	\$5,872,100
Other ^b	\$4,200,323	\$2,270,579
Skate	\$2,054,062	\$3,554,808
Squid, Mackerel, Butterfish	\$1,916,647	\$5,084,463
Summer Flounder, Scup, Black Sea Bass	\$1,481,161	\$2,227,973
Small-mesh Groundfish ^c	\$897,392	\$1,302,488
Herring	\$767,283	\$2,037,784
Dogfish	\$89,071	\$13,607
Bluefish	\$25,828	\$10,751
Tilefish	\$2,675	\$1,084

Notes:

- ^a Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.
- ^b "Other" species includes any species not accounted for in a federally managed group.
- ^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).
- ^d All values are reported in nominal U.S. dollars.

In addition to the commercial fleet, New Bedford has approximately 44 fish wholesale companies, 75 seafood processors, and about 200 shore-side industries (Hall-Arber 2001). This core seafood industry supports 2,600 local jobs, which represents 45 percent of employment in the seafood harvesting sector in Massachusetts (State of Massachusetts 2002).

6.6.2.5 Newport, Rhode Island

Newport, Rhode Island (41.50°N, 71.30°W) is located at the southern end of Aquidneck Island in Newport County (USGS 2008). The city is located 60 miles from Boston, Massachusetts, and about 187 miles from New York City.

6.6.2.5.1 History

English settlers founded Newport in 1639 (City of Newport No Date). Although Newport's port is now mostly dedicated to tourism and recreational boating, it has had a long commercial fishing presence. In the mid 1700s, Newport was one of the five largest ports in colonial North America. Until Point Judith's docking facilities were developed, Newport was the center for fishing and shipping in Rhode Island (Hall-Arber et al. 2001; RIEDC 2008).

Between 1800 and 1930, the bay and inshore fleet dominated the fishing industry of Newport. Menhaden was the most important fishery in Newport and all of Rhode Island until the 1930s when the fishery collapsed. At this time, the fishing industry shifted to groundfish trawling. The

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use of the diesel engine, beginning in the 1920s, facilitated fishing farther from shore than was done in prior years (Hall-Arber et al. 2001).

6.6.2.5.2 Commercial Fishing

Of the federal landed species, scallop had the highest value in 2006, at over \$13 million. The average value of scallop landings for 1997-2006 was just over \$2.5 million; 2006 landings represent a more than five-fold increase over this average value. Lobster was the most valuable species, worth more than \$2.7 million on average, and close to \$3 million in 2006. The squid, mackerel, and butterfish grouping, large-mesh groundfish, and monkfish were all valuable fisheries in Newport (Table 37). The value of landings for homeported vessels in Newport was relatively consistent from 1997-2006, with a high of just under \$8 million in 2003 (Table 38). The level of landings in Newport was steady from 1997-2004, and then saw enormous increases in 2005 and 2006, to almost \$21 million in 2006. Homeported vessels in Newport declined from a high of 59 in 2000 to 48 in 2006. The number of vessels with owners living in Newport increased from 13 in 1997 to 18 in 2006 indicating that most vessels homeported in Newport have owners residing in other communities.

Table 37 - Dollar value of Federally managed groups landed in Newport

Federal Group	Average from 1997-2006 ^d	2006 only ^d
Lobster	\$2,578,908	\$2,971,680
Scallop	\$2,528,448	\$13,267,494
Squid, Mackerel, Butterfish	\$1,425,947	\$1,315,229
Large-mesh Groundfish ^a	\$1,039,962	\$445,273
Monkfish	\$878,265	\$1,068,547
Summer Flounder, Scup, Black Sea Bass	\$739,880	\$815,918
Other ^b	\$334,103	\$401,779
Small-mesh Groundfish ^c	\$179,296	\$43,165
Skate	\$58,481	\$224,184
Herring	\$42,538	\$267,164
Dogfish	\$26,441	\$6,037
Red Crab	\$15,560	\$0
Bluefish	\$11,759	\$9,878
Tilefish	\$9,230	\$1,213

Notes:

^a Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.

^b "Other" species includes any species not accounted for in a federally managed group.

^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

^d All values are reported in nominal U.S. dollars.

Table 38 - Commercial Fishing Trends in Newport

Year	Number of vessels with Newport homeport	Number of vessels whose owner receives mail in Newport	Value of landings among vessels homeported in Newport ^a	Value of fisheries landed in Newport ^a
1997	52	13	\$5,130,647	\$7,598,103
1998	52	16	\$6,123,619	\$8,196,648
1999	52	14	\$6,313,350	\$8,740,253
2000	59	14	\$6,351,986	\$8,296,017
2001	52	15	\$5,813,509	\$7,485,584
2002	55	17	\$6,683,412	\$7,567,366
2003	52	16	\$7,859,848	\$9,082,560
2004	52	15	\$5,951,228	\$8,402,556
2005	54	17	\$6,012,472	\$14,281,505
2006	48	18	\$6,811,060	\$20,837,561

Note:

^a All values are reported in nominal U.S. dollars.

6.6.2.6 Portland Harbor, Maine

The city of Portland, Maine (43.66 N, 70.2 W) has 56.9 miles of coastline (Sheehan and Copperthwaite 2002), a terrestrial area of 54.9 square miles, and 31.4 square miles of water. It is located in Cumberland County on Casco Bay, and is adjacent to South Portland, Westbrook, and Falmouth. Portsmouth and Manchester, New Hampshire are the closest large cities (MapQuest 2006). Portland is the largest city in Maine and has the highest population in New England north of Boston.

6.6.2.6.1 History

The city's port industries have driven its economy since its settlement. From the mid-1800s until World War I, Portland provided the only port for Montreal, Canada. Railroads from the south to the north fed through the city, facilitating trade and travel. Although Canada developed its own ports, and other cities in southern New England states built larger ports, the city remained tied to its maritime roots by depending on the fishing industry. More recently, it has become a popular cruise ship destination. Although tourism plays a major role in the city's economy, Portland functions as the second largest oil port on the east coast of the U.S., and as valuable fishing port (Monroe No Date). For a more detailed history of Portland and the surrounding fishing communities, refer to Hall Arber et al. (2001).

6.6.2.6.2 Commercial Fishing

Portland's landings come primarily from the large-mesh groundfish species and from lobster, with over \$14 million and \$12 million respectively over the 10-year average (Table 39). Monkfish and herring are also important species. There was also a variety of other species landed in Portland between the years 1997-2006. Both the number of vessels homeported and number of vessels registered with owner's living in Portland slightly decreased between 1997 and 2006. The level of fishing homeport value increased until 2006, where there was a drop from over \$18

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million in the previous year to about \$13 million. The level of fishing landed experienced a similar trend, with a dip from 2005 to 2006 of over \$6 million (Table 40).

Table 39 - Dollar value of Federally managed groups landed in Portland Harbor

Federal Group	Average from 1997-2006 ^d	2006 only ^d
Large-mesh Groundfish ^a	\$14,433,950	\$10,756,311
Lobster	\$12,616,286	\$8,737,373
Monkfish	\$4,908,022	\$3,094,679
Herring	\$2,524,047	\$4,423,437
Other ^b	\$2,007,356	\$684,362
Scallop	\$65,950	\$72,250
Small-mesh Groundfish ^c	\$44,811	\$168
Skate	\$44,582	\$933
Squid, Mackerel, Butterfish	\$17,444	CONFIDENTIAL
Tilefish	\$15,623	CONFIDENTIAL
Summer Flounder, Scup, Black Sea Bass	\$12,334	CONFIDENTIAL
Dogfish	\$12,023	\$12,211
Bluefish	\$151	\$73

Notes:

^a "Other" species includes any species not accounted for in a federally managed group.

^b Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.

^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

^d All values are reported in nominal U.S. dollars.

Table 40 - Commercial Fishing Trends in Portland

Year	Number of vessels with Portland homeport	Number of vessels whose owner receives mail in Portland	Value of landings among vessels homeported in Portland ^a	Value of fisheries landed in Portland ^a
1997	123	49	\$14,260,267	\$43,219,804
1998	104	43	\$11,898,155	\$35,203,041
1999	116	47	\$14,781,969	\$42,393,247
2000	115	43	\$16,486,230	\$45,434,740
2001	109	39	\$15,488,517	\$34,356,660
2002	107	40	\$15,208,020	\$40,396,946
2003	114	40	\$15,478,904	\$28,892,963
2004	111	38	\$17,763,527	\$34,690,050
2005	111	43	\$18,051,059	\$34,613,266
2006	104	44	\$13,255,702	\$27,825,058

Note:

^a All values are reported in nominal U.S. dollars.

6.6.2.7 Portsmouth, New Hampshire

Portsmouth (43.03° N, 70.47°W) (USGS 2008) is located in Rockingham County, New Hampshire. Portsmouth Harbor is located by the mouth of the Piscataqua River, which allows deep water access (State of New Hampshire DHR 2006). Portsmouth is located along the State's seaboard that only totals about 18 miles.

6.6.2.7.1 History

The City of Portsmouth is the second oldest city in New Hampshire. It was originally settled in 1623 as Strawberry Banke and was incorporated as Portsmouth in 1631. Fishing, farming, shipbuilding, and coastal trade were the major industries throughout New Hampshire in the 1600s. By 1725, Portsmouth was a thriving commercial port, exporting timber products and importing a wide range of goods (Wallace 2006). However, the 1800s brought change to Portsmouth as the seacoast declined as a commercial center. Many nearby towns, like Dover, Newmarket, and Somersworth, turned to textile manufacturing (Wallace 2006). The Portsmouth Naval Shipyard, established in June 1800, is the oldest naval shipyard continuously operated by the United States Government (PNS No Date). In recent times, high-tech industries and an increase in tourism has transformed Portsmouth and all of southern New Hampshire, making New Hampshire into the fastest growing state in the Northeast (State of New Hampshire DHR 2006).

6.6.2.7.2 Commercial Fishing

Large-mesh groundfish and monkfish were the most valuable landings in Portsmouth between the years 1997 and 2006 (Table 41). Additionally, lobster, "other" species, and sea scallops accounted for a large portion of the value of species landed in Portsmouth. The value of landings of most of these species groupings had declined in 2006 from the 1997-2006 average; lobster landings had increased considerably, however, and were the most valuable landings for Portsmouth in 2006.

The number of homeported vessels has varied between the years 1997 and 2006, but overall showed an increasing trend. In 1997, there were 54 vessels which increased to a high of 67 vessels in 2004. The number of vessels where the owner's city is Portsmouth varies slightly over the years with no consistent trend (Table 42).

Table 41 - Dollar value of Federally managed groups landed in Portsmouth

Federal Group	Rank Value of Average Landings from 1997-2006^d
Large-mesh Groundfish ^a	1
Monkfish	2
Lobster	3
Other ^b	4
Scallop	5
Dogfish	6
Herring	7
Small-mesh Groundfish ^c	8
Skate	9
Bluefish	10
Squid, Mackerel, Butterfish	11
Summer Flounder, Scup, Black Sea Bass	12
Tilefish	13

Notes:

- ^a Large-mesh Groundfish: cod, winter flounder, yellowtail flounder, American plaice, sand-dab flounder, haddock, white hake, redfish, and Pollock.
- ^b "Other" species includes any species not accounted for in a federally managed group
- ^c Small-mesh Multispecies: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).
- ^d Only rank value is provided because value information is confidential in ports with fewer than three vessels or fewer than three dealers, or where one dealer predominates in a particular species and would therefore be identifiable.

Table 42 – Commercial Fishing Trends in Portsmouth

Year	Number of vessels with Portsmouth homeport	Number of vessels whose owner receives mail in Portsmouth
1997	54	26
1998	44	20
1999	45	18
2000	62	21
2001	63	22
2002	59	25
2003	54	21
2004	67	29
2005	64	20
2006	66	19

6.6.3 Economic Status of Commercial Groundfish Harvesting Sector

6.6.3.1 DAS Allocation and Use

The number of Category A DAS allocated to the multispecies fleet generally declined in FY 2004 – 2008. Just over 50,000 days were allocated in 2005, and slightly less than 44,000 were allocated in 2008. DAS allocated to vessels that called in decreased by an even greater amount – from over 37,000 in 2005 to under 26,000 in 2008. The number of permitted vessels in the time span decreased by 120 (from 1,320 to 1,200), and the number of vessels that called in decreased by an even greater amount (from 685 to 512). Despite fewer DAS allocated and fewer boats fishing, the number of DAS used remained relatively constant in FY 2005 – 2008. In those years, the fewest days (30,847) were used in 2008, and the largest number of days (32,804) was used in 2007 (Table 43). These values reflect the DAS charged and do not take into account differential DAS counting (adopted in FY 2006). As a result, the number of DAS charged in FY 2006 does not bear the same relationship to time underway as the number charged in earlier years. The actual DAS underway on Category A DAS for FY 2006 – FY 2008 was about 25,000 (FY 2006), 25,314 in FY 2007, and 25,529 in FY 2008.

Table 43 – Multispecies Limited Access A Days-at-Sea Used by Multispecies Permit Category, FY 2005-2008

Categories	Total Number of Permitted Vessels	Total Days-at-Sea Allocated	Number of Permitted Vessels that Called In	DAS Allocated to Vessels that Called In	DAS Allocated and Net Leased to Vessels that Called In	Total DAS Used
2005 Individual	1,128	45,969	619	34,529	41,022	29,898
Combination	46	649	11	472	485	423
Hook Gear	94	1,682	31	1,119	1,105	387
Large Mesh	44	1,680	24	1,127	1,540	1,064
Small Vessel Exemption	8	38	0	0	0	0
Total	1,320	50,018	685	37,247	44,152	31,773
2006 Individual	1,107	46,240	568	31,184	40,137	30,072
Combination	47	439	3	189	169	157
Hook Gear	82	2,413	22	1,472	1,479	337
Large Mesh	41	1,692	32	1,261	1,631	1,229
Small Vessel Exemption	7	37	0	0	0	0
Total	1,284	50,820	625	34,106	43,416	31,794
2007 Individual	1,099	45,835	524	28,721	40,637	31,595
Combination	47	415	5	204	296	234
Hook Gear	79	2,287	19	1,277	1,265	270
Large Mesh	33	1,034	25	956	990	693
Small Vessel Exemption	13	138	1	12	12	12
Total	1,271	49,710	574	31,170	43,200	32,804
2008 Individual	1,037	41,258	474	24,369	36,102	29,354
Combination	46	517	5	219	393	369
Hook Gear	74	1,216	9	435	393	115
Large Mesh	31	883	23	769	842	963
Small Vessel Exemption	12	97	1	12	12	46
Total	1,200	43,971	512	25,805	37,743	30,847

These data include multispecies/monkfish DAS trips (in which the multispecies and monkfish clocks run concurrently).
Permits are limited access multispecies permits that were active on the last day of the fishing year.
DAS Allocated is multispecies A DAS net allocation after including base and carry over, NOT leased.
Source: Permits Database and AMS Database

6.6.3.2 Landings and Revenues

The commercial harvesting sector may be described as a function of its multiple components, including gear types, vessels, and communities. In this section, activity in the commercial sector is characterized in terms of **permit category, vessel length class, homeport state, and port group**. Because of the way in which the data is queried for each of these descriptive approaches, total numbers of vessels, landings and revenues may differ slightly among the four sections. In some cases information cannot be reported due to data confidentiality provisions. Where such anomalies occur, we have attempted to provide a clear explanation. Revenue is reported as gross revenue and does not take into account the changes in fixed and operating costs over time (net revenue).

Landings and revenues by fishing year were summarized in Amendment 13, FW 40A, FW 40B, FW 41, FW 42, and Amendment 16. This section updates this information for FY 2004 through

2008. Minor differences exist between the information previously reported and this section due to updates to the databases and revisions to data queries (including the addition of Atlantic wolffish to the management unit). Most notably, nominal and constant groundfish revenues were incorrectly reported in Amendment 16 in Table 57 (NEFMC 2009) due to a data error; other tables were correct. The data are also reported in different categories than in previous reports in order to capture changes in permit categories and changes in landings and revenues in communities.

Regulated groundfish (cod, haddock, yellowtail flounder, winter flounder, witch flounder, windowpane flounder, plaice (dabs), pollock, redfish, Atlantic halibut, white hake, red/white hake mixed, and Atlantic wolffish) and ocean pout landings and revenues are summarized in Table 44. This table includes all landings reported to the NMFS dealer database system, regardless of whether the landings can be attributed to a multispecies permit. It includes aggregate landings reported by states and landings that cannot be attributed to a permit as well as landings by vessels that did not possess a federal multispecies permit (i.e. landings from state registered vessels fishing in state waters). Regulated groundfish landings declined from 80 million pounds in FY 2004 to 50 million pounds (landed weight) in FY 2006, or 37 percent, before increasing to 68 million pounds in FY 2008. Nominal revenues decreased 9 percent from FY 2004 (\$84.6 million) to FY 2006 (\$76.9 million) and then rebounded to \$85 million in FY 2008. Revenues in constant 1999 dollars declined 13 percent, from \$73.9 million in FY 2004 to \$64.3 million in FY 2008. The average price, in both nominal and constant dollar terms, peaked in FY 2006, the year with the lowest landed weight. By FY 2008, in terms of constant dollars the price declined to less than a dollar per pound. The sections following this table summarize landings and revenues for groundfish permit holders only.

Table 44 – Total groundfish landings and revenues, FY 2004 – FY 2008

Data	Fishing Year				
	2004	2005	2006	2007	2008
Groundfish, landed weight	79,833,841	65,707,988	50,095,191	60,781,989	68,112,481
Groundfish, live weight	87,280,257	72,063,086	54,979,680	67,437,099	75,790,377
Nominal Dollars	\$84,633,488	\$85,210,805	\$76,893,026	\$84,596,827	\$85,023,624
1999 Dollars	\$73,980,543	\$74,026,292	\$64,951,294	\$67,027,790	\$64,330,117
Average Price (nominal)	\$1.06	\$1.30	\$1.53	\$1.39	\$1.25
Average Price (constant)	\$0.93	\$1.13	\$1.30	\$1.10	\$0.94

6.6.3.2.1 Landings and Revenues by Groundfish Permit Category

As mentioned earlier, the information in the following sections is reported for groundfish permits only. Total landings by groundfish permits declined from 509.9 million pounds in FY 2004 to 436 million pounds in FY 2006 before rebounding to 460.6 million pounds in FY 2008, a decline of 9.7 percent from FY 2004. For individual DAS permits, total landings declined from 244.9 million pounds in FY 2004 to 194.6 million pounds in FY 2007 before increasing to 210.6 million pounds in FY 2008, a decline of 14.1 percent from FY 2004. Revenue changes were similar; from FY 2004 to FY 2008 revenues (constant 1999 dollars) declined 7 percent for all permits and 12.5 percent for individual DAS permits (Table 45 and

Table 46).

Groundfish landings by permitted vessels declined from 77.3 million pounds in FY 2004 to 48.4 million pounds in FY 2006 (-37 percent), then increased to 64.5 million pounds in FY 2008 (-14%). Groundfish revenues did not show as large an initial reduction, declining from \$71.3 million in FY 2004 to \$62.5 million in FY 2006, a decline of 12 percent. In spite of the increase in landed weight from FY 2006 to FY 2008 revenues actually declined slightly to \$62.3 million, or 13 percent less than FY 2004. Individual DAS permits did slightly better, with FY 2004 revenues of \$66.9 million declining 9 percent to \$60.5 million in FY 2006, and declining again to \$59.5 million in FY 2008, 11 percent less than in FY 2004 (Table 47 and Table 48).

When comparing total revenues and groundfish revenues for individual DAS permit holders it is clear that groundfish is only a portion of the revenue generated by these fishing businesses. In all years, groundfish revenues were 37 to 42 percent of the revenues generated by groundfish permits. In recent years about half the individual DAS permits earn less than 25 percent of their revenues from groundfish. These revenues can be earned on groundfish trips or on trips in other fisheries. During this period there are 1,071 individual DAS permits with a landings record of any species in the dealer database. The percentage of these permits with no groundfish revenues increased from 22 percent in FY 2004 to 30 percent in FY 2008, even as the total number of permits landing groundfish also declined. The percentage earning 75 percent or more of their revenues from groundfish has remained fairly constant at between 20 and 25 percent (Table 49), but the number has declined. Because of the importance of other revenues, total revenues are also examined for this fishery.

The contribution of different species to landings and revenues are illustrated in Figure 8 and Figure 9. In terms of landed weight, cod, haddock and pollock were major components of the fishery throughout the time period. Yellowtail flounder was a major component in FY 2004 and 2005, but increasingly restrictive TACs for GB yellowtail flounder have reduced the contribution of that species to landings. Cod is the most valuable species in terms of nominal revenue, with pollock and haddock the other key components. Yellowtail, winter, and witch flounder contribute similar proportions to revenues.

Table 45 – Total landings by groundfish permit category, FY 2004 – FY 2008

CAT	2004	2005	2006	2007	2008
Individual DAS	244,869,377	203,659,914	195,144,787	194,633,706	210,610,508
Fleet DAS	605,481				
Small Vessel Exemption	Conf.	Conf.	Conf.	119,178	157,423
Hook Gear	2,134,466	1,694,986	1,218,495	1,009,899	1,077,388
Combination Vessel	14,452,283	10,888,403	10,970,697	9,360,710	10,347,834
Large Mesh Individual DAS	7,105,788	4,910,866	4,338,460	4,307,712	4,349,382
Large Mesh Fleet DAS	150,183				
Handgear A	1,637,728	30,178,130	18,763,373	7,554,424	6,418,611
Handgear B	129,282,110	153,016,712	113,799,842	126,772,588	129,167,606
Other Open Access	109,709,282	98,185,684	92,146,876	97,217,711	98,436,873
Grand Total	509,946,698	502,534,695	436,382,530	440,975,928	460,565,625

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Table 46 – Total revenues (constant 1999 dollars) by groundfish permit category, FY 2004 – FY 2008

Category	2004	2005	2006	2007	2008
Individual DAS	\$161,467,018	\$180,707,691	\$161,258,141	\$147,249,497	\$141,397,879
Fleet DAS	\$598,602				
Small Vessel Exemption	Conf.	Conf.	Conf.	\$146,880	\$261,457
Hook Gear	\$3,335,824	\$3,743,698	\$3,648,543	\$2,835,928	\$2,342,620
Combination Vessel	\$40,517,445	\$48,260,800	\$44,677,387	\$38,921,702	\$35,564,476
Large Mesh Individual DAS	\$6,459,728	\$6,710,455	\$4,860,237	\$3,789,944	\$4,378,467
Large Mesh Fleet DAS	\$107,855				
Handgear A	\$1,401,010	\$5,078,144	\$4,069,096	\$3,008,347	\$2,582,939
Handgear B	\$38,259,487	\$57,326,175	\$55,521,251	\$55,642,744	\$52,663,840
Other Open Access	\$241,955,823	\$281,705,097	\$254,821,291	\$255,819,899	\$218,987,039
Grand Total	\$494,102,792	\$583,532,060	\$528,855,946	\$507,414,941	\$458,178,718

Table 47 – Groundfish landings (lbs. landed weight) by groundfish permit category

Category	2004	2005	2006	2007	2008
Individual DAS	72,715,253	62,067,822	46,802,829	57,662,703	64,524,562
Fleet DAS	95,484				
Small Vessel Exemption	Conf.	Conf.	Conf.	1,848	2,592
Hook Gear	631,805	544,607	205,806	192,718	195,082
Combination Vessel	1,894,704	846,338	397,448	558,376	1,180,765
Large Mesh Individual DAS	1,515,292	671,286	590,093	163,378	317,851
Large Mesh Fleet DAS	9,621				
Handgear A	248,024	30,955	122,378	79,083	100,167
Handgear B	68,475	47,647	54,995	150,517	84,528
Other Open Access	101,875	58,480	212,711	115,814	78,313
Grand Total	77,280,533	64,267,135	48,386,260	58,924,437	66,483,860

Table 48 – Groundfish revenues (constant 1999 dollars) by groundfish permit category

Category	2004	2005	2006	2007	2008
Individual DAS	\$66,868,777	\$69,188,498	\$60,526,167	\$62,728,288	\$59,488,516
Fleet DAS	\$61,184				
Small Vessel Exemption	Conf.	Conf.	Conf.	\$2,976	\$3,389
Hook Gear	\$828,724	\$875,657	\$383,944	\$336,908	\$253,003
Combination Vessel	\$1,763,554	\$1,195,786	\$535,598	\$727,519	\$1,075,572
Large Mesh Individual DAS	\$1,382,159	\$759,700	\$554,015	\$202,134	\$1,145,087
Large Mesh Fleet DAS	\$10,874				
Handgear A	\$183,214	\$47,329	\$117,613	\$108,815	\$124,544
Handgear B	\$90,048	\$75,338	\$78,602	\$207,849	\$124,239
Other Open Access	\$111,505	\$83,056	\$321,082	\$169,123	\$88,261
Grand Total	\$71,300,039	\$72,225,364	\$62,517,020	\$64,483,613	\$62,302,610

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Table 49 – Groundfish as a percent of total revenues, FY 2004 - FY 2008 for Individual DAS permits only

Max %	2004		2005		2006		2007		2008	
	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %	Freq.	Cum. %
0	190	21.57%	213	25.15%	225	27.51%	243	31.40%	217	30.06%
25%	204	44.72%	215	50.53%	193	51.10%	141	49.61%	165	52.91%
50%	120	58.34%	89	61.04%	113	64.91%	108	63.57%	61	61.36%
75%	152	75.60%	159	79.81%	138	81.78%	119	78.94%	105	75.90%
100%	215	100.00%	171	100.00%	149	100.00%	163	100.00%	174	100.00%
Total	881		847		818		774		722	

Figure 8 – Multispecies landings by species, FY 2004 – FY 2008

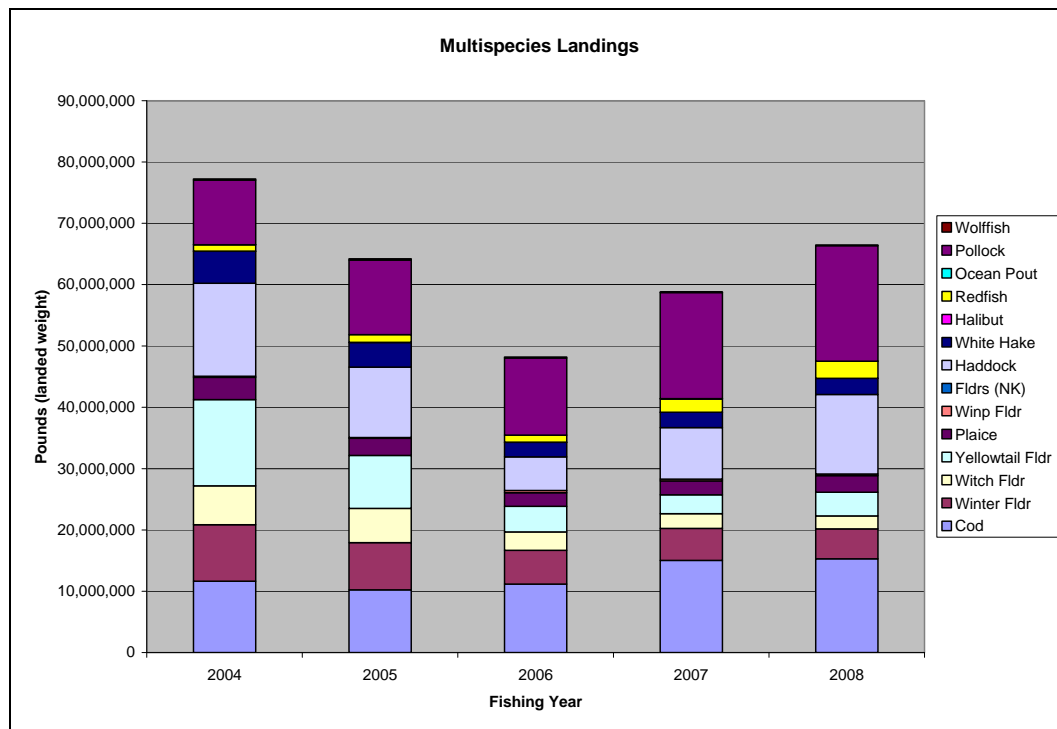
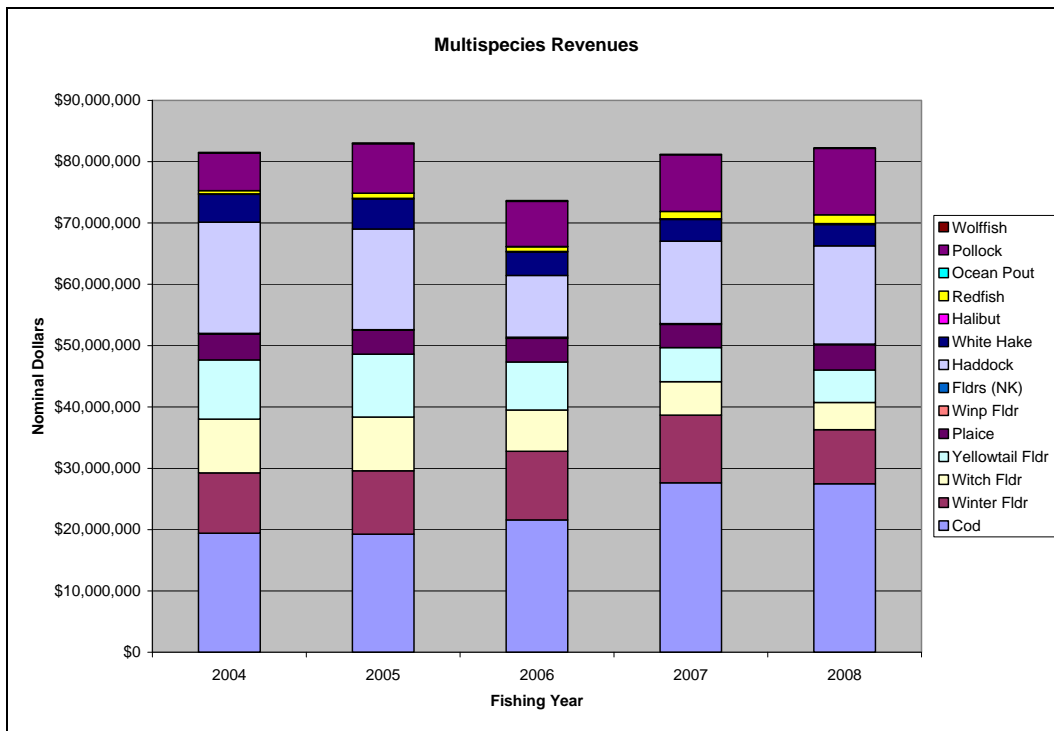


Figure 9 – Multispecies nominal revenues by species, FY 2004 – FY 2008



The number of permits landing groundfish declined from 961 in FY 2004 to 686 in FY 2008. These values include landings by all permit categories. Over 95 percent of groundfish landings are by vessels in the individual DAS permit category. These permits are often considered the core of the fishery and the following discussions will highlight the changes for this group. The number of these permits landing groundfish declined from 691 in FY 2004 to 505 in FY 2008, a decline of 27 percent since the implementation of Amendment 13. At the same time, the groundfish revenues per permit increased in this category from \$97.7 thousand in FY 2004 to \$117.8 thousand in FY 2008 (constant 1999 dollars, Table 50 and Table 51).

Table 50 – Number of permits landing groundfish, FY 2004 – FY 2008

	2004	2005	2006	2007	2008
Individual	691	634	593	531	505
Small Vessel Exemption	2	1	2	4	4
Hook Gear	35	33	22	18	14
Combination Vessel	18	17	12	18	13
Large Mesh	28	22	17	11	7
Handgear A	46	34	26	23	32
Handgear B	76	61	60	74	64
Other Open Access	65	53	63	62	47
Total	961	855	795	741	686

Table 51 - Groundfish revenues (constant 1999 dollars) per permit

	2004	2005	2006	2007	2008
Individual	\$96,771	\$109,130	\$102,068	\$118,132	\$117,799
Small Vessel Exemption	Conf.	Conf.	Conf.	\$744	\$847
Hook Gear	\$23,678	\$26,535	\$17,452	\$18,717	\$18,072
Combination Vessel	\$97,975	\$70,340	\$44,633	\$40,418	\$82,736
Large Mesh	\$49,751	\$34,532	\$32,589	\$18,376	\$163,584
Handgear A	\$3,983	\$1,392	\$4,524	\$4,731	\$3,892
Handgear B	\$1,185	\$1,235	\$1,310	\$2,809	\$1,941
Other Open Access	\$1,715	\$1,567	\$5,097	\$2,728	\$1,878
Total	\$74,194	\$84,474	\$78,638	\$87,022	\$90,820

6.6.3.2.2 Landings and Revenues by Length Class

When groundfish landings and revenues (constant 1999 dollars) are examined by vessel length, it is clear that vessels less than 30 feet in length have become an inconsequential component of the fishery since FY 2004, accounting for less than one-tenth of a percent of landings in FY 2008. Vessels between 30 and 50 feet in length actually increased groundfish landings (+28 percent) and revenues (+14 percent) from FY 2004 to FY 2008, the only vessel size class to do so. Vessels between 50 and 75 feet saw landings decline by 30.5 percent and revenues decline by 21.8 percent. Vessels 75 feet and over saw landings decline by 18.3 percent and revenues decline by 19.5 percent. These changes are somewhat surprising, as many believed that the smaller vessels size class (30-50 feet) would suffer the most from the differential DAS counting measures adopted in FW 42 (Table 52).

Table 52 – Groundfish landed weight and constant (1999) dollars by vessel length class

		Fishing Year				
Length Group	Data	2004	2005	2006	2007	2008
Less than 30	Weight (lbs.)	480,973	146,590	111,993	70,667	57,250
	Dollars	\$518,424	\$201,463	\$134,229	\$105,350	\$65,147
30 to less than 50	Weight (lbs.)	15,975,112	15,514,340	13,767,506	17,269,922	20,504,026
	Dollars	\$17,325,040	\$18,620,985	\$16,776,424	\$18,529,843	\$19,796,929
50 to less than 75	Weight (lbs.)	31,223,980	24,542,026	18,365,249	19,791,111	21,723,950
	Dollars	\$26,661,714	\$26,827,521	\$23,738,294	\$22,144,339	\$20,858,444
75 and over	Weight (lbs.)	29,601,487	24,066,362	16,142,254	21,792,737	24,198,634
	Dollars	\$26,796,080	\$26,577,010	\$21,868,655	\$23,704,081	\$21,582,091
Total Landed Weight (lbs.)		77,281,552	64,269,318	48,387,002	58,924,437	66,483,860
Total Constant (1999) Dollars		\$71,301,257	\$72,226,979	\$62,517,603	\$64,483,613	\$62,302,610

6.6.3.2.3 Landings and Revenues by Homeport State

Each permit holder declares a homeport state on all permit applications. When evaluating impacts of regulations on individual states, summarizing landings and revenues by these homeport states may indicate differential impacts under the assumption that the economic benefits of fishing

activity return primarily to these homeport states. Landings and revenues by homeport state are shown in Table 53 and Table 54. Vessels claiming Maine, New Hampshire, Massachusetts, or Rhode Island as homeport state landed 96 percent of the groundfish in FY 2008, a slight increase from the 93 percent landed in FY 2004. Of these four states, only New Hampshire vessels increased groundfish landings from FY 2004 to FY 2008 by 1.9 million pounds, or 56 percent. In FY 2008 Maine vessels landed 98 percent of the groundfish they landed in FY 2004, while Massachusetts vessels landed 87 percent of what was landed in FY 2004. Groundfish landings by Rhode Island vessels declined to 43 percent of the FY 2004 value. Again, these changes are somewhat surprising in that the inshore differential DAS area in the GOM was expected to reduce groundfish landings for New Hampshire vessels. Revenue changes differed only slightly from the changes in groundfish landed weight with the exception of Rhode Island, where the 57 percent decline in landings led to only a 38 percent decline in groundfish revenues.

But as previously noted revenues (constant 1999 dollars) from other fisheries are key components of the income for permit holders. When total revenues by homeport state are examined for the core groundfish vessels - the Individual DAS permits – a different picture emerges. From FY 2004 to FY 2008, total revenue declines were similar for individual DAS permits claiming homeport states of Maine (-11 percent), Massachusetts (-12 percent), and Rhode Island (-13 percent). Total revenues for New Hampshire permits increased by 13 percent (Table 55).

Table 53 – Groundfish landings by homeport state, FY 2004 – FY 2008

Homeport State	2004	2005	2006	2007	2008
CT	44,916	20,744	91,739	189,999	218,419
ME	12,348,854	11,565,820	8,611,001	11,240,196	12,067,158
MA	50,702,142	40,489,242	30,784,454	37,684,924	44,141,437
NH	3,346,377	3,170,158	2,795,023	3,944,409	5,224,038
RI	6,114,406	5,319,875	3,661,606	3,611,712	2,616,902
NJ	657,135	599,466	557,385	517,943	386,105
NY	1,722,950	1,315,094	1,016,606	961,635	840,491
NC	1,356,537	1,113,425	410,869	359,894	492,182
OTHER	988,235	675,494	458,319	413,725	497,128
Grand Total	77,281,552	64,269,318	48,387,002	58,924,437	66,483,860

Table 54 – Groundfish revenues (constant 1999 dollars) by homeport state, FY 2004 – FY 2008

Homeport State	2004	2005	2006	2007	2008
CT	\$54,177	\$12,362	\$155,887	\$280,790	\$245,458
ME	\$10,822,914	\$12,050,536	\$9,366,964	\$10,186,039	\$10,406,038
MA	\$48,164,703	\$47,268,256	\$41,237,285	\$42,624,942	\$41,263,324
NH	\$3,276,638	\$3,184,183	\$2,665,476	\$3,534,547	\$5,182,273
RI	\$4,838,032	\$5,613,998	\$5,527,044	\$4,924,134	\$3,018,019
NJ	\$662,121	\$636,116	\$873,485	\$805,938	\$473,936
NY	\$1,605,484	\$1,633,937	\$1,509,486	\$1,282,188	\$924,186
NC	\$914,559	\$1,021,951	\$616,740	\$466,787	\$407,811
OTHER	\$962,629	\$805,639	\$565,236	\$378,248	\$381,566
Grand Total	\$71,301,257	\$72,226,979	\$62,517,603	\$64,483,613	\$62,302,610

Table 55 – Total revenues for individual DAS permit holders, FY 2004 – FY 2008

Homeport State	2004	2005	2006	2007	2008
CT	\$183,134	\$284,550	\$425,969	\$1,299,755	\$2,114,618
ME	\$17,870,251	\$18,962,386	\$15,972,821	\$16,382,729	\$15,828,700
MA	\$76,375,184	\$88,616,943	\$79,001,706	\$74,695,252	\$67,579,733
NH	\$5,570,041	\$6,453,317	\$5,006,177	\$5,974,224	\$6,321,118
NJ	\$10,060,159	\$12,791,005	\$11,042,013	\$10,762,757	\$10,358,704
NY	\$16,578,096	\$16,860,322	\$16,034,157	\$13,012,111	\$13,826,474
RI	\$25,496,648	\$28,137,507	\$27,979,994	\$22,810,517	\$22,218,766
NC	\$4,972,802	\$5,634,474	\$3,387,060	\$1,399,928	\$1,504,077
OTHER	\$4,360,703	\$2,967,187	\$2,408,244	\$912,223	\$1,645,689
Grand Total	\$161,467,018	\$180,707,691	\$161,258,141	\$147,249,497	\$141,397,879

6.6.3.2.4 Landings and Revenues by Port Group

In this section, landings and revenues are summarized by the place of landing, with individual ports grouped into a series of port groups first used to characterize fishing activity in Amendment 13. This is a different way of looking at the economic activity generated by groundfish fishing activity. Maine ports experienced a large drop in groundfish landings over this period, with the state as a whole seeing groundfish landings decline by 53 percent. In contrast, Coastal New Hampshire experienced a 4 percent increase, Gloucester and the North Shore a 54 percent increase (almost all since FY 2006), and Boston and the South Shore a 75 percent increase – with the increase occurring since FY 2006. With respect to revenues, only Gloucester/North Shore (+24 percent) and Boston/South Shore (+46 percent) increased groundfish revenues from FY 2004 to FY 2008. In spite of a slight increase in landed weight, New Hampshire port groundfish revenues declined by 17 percent from FY 2004 to FY 2008. New Bedford MA was the top groundfish port group in FY 2004, but by FY 2006 ceded the top ranking to Gloucester/North Shore MA.

When groundfish revenues and landings by homeport state are compared to the same data by port group, it is clear that some vessels in Maine and New Hampshire no longer land in those states. Given the changes in Gloucester and Boston, it is likely (though not yet confirmed) that vessels that used to land in Maine now land in other ports.

As with revenues by homeport state, the total revenues for individual DAS permits differs from the changes noted for groundfish revenues. Gloucester/North Shore and Boston/South Shore show a 32 percent and 48 percent increase in total revenues for individual DAS permits. Coastal NH showed a 23 percent decline, while Lower Mid-Coast Maine experienced a 58 percent decline in total revenues for individual DAS vessels. New Bedford experienced a 22 percent decline. Most other port groups experienced declines as well.

6.6.3.2.5 Summary

Several broad themes emerge from an examination of the landings and revenue data. First, contrary to expectations, some ports in the inshore GOM have weathered recent regulatory restrictions relatively well - Gloucester/North Shore and Boston/South Shore in particular. These two ports increased groundfish landings and revenues since FY 2004, while the expectation from FW 42 was that there would be declines. It appears that these increases may have occurred in part at the expense of other ports, such as those in Maine. Second, again contrary to the common

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wisdom, vessels in the 30 to 50 foot range have also increased their groundfish landings and revenues. The expectation from FW 42 was that this group would be hampered by the stringent regulations in the inshore GOM, particularly the differential DAS counting areas. Third, there is evidence of the concentration of groundfish landings into fewer port groups, driven by the increase in importance of Gloucester and Boston. Fourth, the number of permits landing groundfish continues to decline. The decline in permits and the concentration of groundfish landings in key ports may have implications for social and community impacts as the fishery shifts to sectors with the adoption of Amendment 16. Finally, the regulatory restrictions designed to control groundfish landings have also tended to reduce total landings and revenues for the individual DAS permit holders.

Table 56 – Groundfish landings by port group, FY 2004 – FY 2008

		Fishing Year				
	Port Group	2004	2005	2006	2007	2008
ME	DOWNEAST ME		2,815	1,780	3,191	3,884
	LOWER MID_COAST ME	13,822,854	11,390,361	6,913,858	7,220,350	6,756,913
	ME					48
	SOUTHERN ME	559,631	458,892	272,039	228,630	71,651
	UPPER MID_COAST ME	651,447	581,538	50,783	150,556	162,746
	Total	15,033,932	12,433,606	7,240,219	7,602,727	6,996,012
MA	BOSTON / SOUTH SHORE	5,216,066	5,091,528	4,351,885	7,947,857	9,134,345
	CAPE AND ISLANDS	3,941,488	3,466,607	1,975,394	2,624,889	3,143,722
	GLOUCESTER /NORTH SHORE	14,708,843	15,429,355	14,235,393	19,044,659	22,647,831
	NEW BEDFORD COAST	31,436,468	22,076,741	13,975,919	15,240,663	18,571,310
	Total	55,302,865	46,064,231	34,538,591	44,858,068	53,497,208
NH	COASTAL NH	3,520,796	3,270,963	3,248,560	2,933,814	3,650,500
RI	COASTAL RI	2,645,309	1,876,245	2,334,131	2,568,854	1,698,956
	Total	2,645,309	1,876,245	2,334,417	2,568,854	1,699,003
CT	COASTAL CT				34,238	99,919
NY	LONG ISLAND NY	357,407	323,905	568,942	498,920	321,871
	Total	358,877	324,175	569,002	498,920	322,353
NJ	NORTHERN COASTAL NJ	407,040	296,113	450,506	423,277	216,855
	SOUTHERN COASTAL NJ	2,704	1,437	4,406	3,669	707
	Total	409,744	297,550	454,912	426,946	217,562
Other		10,029	2,548	1,301	870	1,303
Total		77,281,552	64,269,318	48,387,002	58,924,437	66,483,860

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Table 57 – Groundfish revenues (constant 1999 dollars) by port group, FY 2004 – FY 2008

State	Port Group	Fishing Year				
		2004	2005	2006	2007	2008
CT	COASTAL CT				\$58,136	\$124,460
	DOWNEAST ME		\$11,443	\$7,640	\$13,113	\$15,655
	LOWER MID_COAST	\$12,306,848	\$11,752,197	\$7,741,772	\$6,703,526	\$7,165,928
	SOUTHERN ME	\$583,903	\$455,095	\$303,841	\$214,573	\$59,038
	UPPER MID_COAST	\$547,824	\$645,058	\$66,849	\$182,348	\$152,130
ME	Total	\$13,438,575	\$12,863,794	\$8,123,764	\$7,113,559	\$7,394,024
	BOSTON / SOUTH SHORE	\$5,455,998	\$6,085,710	\$5,956,670	\$7,946,000	\$7,944,989
	CAPE AND ISLANDS	\$4,792,674	\$4,748,862	\$2,990,911	\$3,624,090	\$3,239,512
	GLOUCESTER AND NORTH SHORE	\$15,340,838	\$18,017,107	\$16,837,096	\$18,366,900	\$19,017,135
	NEW BEDFORD COAST	\$25,796,892	\$24,186,247	\$20,543,177	\$19,899,518	\$19,016,640
MA	Total	\$51,386,401	\$53,037,927	\$46,327,853	\$49,836,509	\$49,218,275
NH	COASTAL NH	\$3,438,552	\$3,126,812	\$2,730,512	\$2,397,925	\$2,847,136
	NORTHERN COASTAL	\$481,599	\$413,679	\$725,030	\$690,092	\$308,693
	SOUTHERN COASTAL	\$3,261	\$1,314	\$6,804	\$3,215	\$703
NJ	Total	\$484,859	\$414,993	\$731,834	\$693,307	\$309,395
	LONG ISLAND NY	\$389,164	\$441,206	\$831,152	\$729,412	\$388,555
NY	Total	\$389,670	\$441,548	\$831,203	\$729,412	\$389,185
RI	COASTAL RI	\$2,152,964	\$2,340,605	\$3,770,813	\$3,654,369	\$2,019,089
RI	Total	\$2,152,964	\$2,340,605	\$3,771,153	\$3,654,369	\$2,019,170
Other		\$10,487	\$2,159	\$1,286	\$395	\$173
Total		\$71,300,039	\$72,225,364	\$62,517,020	\$64,483,613	\$62,302,610

Table 58 – Total revenues for individual DAS permits, FY 2004 – FY 2008

STATE	Port Group	Fishing Year				
		2004	2005	2006	2007	2008
CT	COASTAL CT				\$788,821	\$2,004,384
ME	DOWNEAST LOWER	\$228,809	\$113,455	\$94,560	\$209,194	\$284,793
	MID_COAST	\$18,438,837	\$16,530,492	\$11,090,711	\$9,138,795	\$7,814,395
	SOUTHERN	\$872,608	\$762,299	\$1,023,711	\$758,089	\$313,965
	UPPER MID_COAST	\$2,534,482	\$2,111,334	\$3,030,150	\$3,165,765	\$3,681,638
	(blank)				\$42,713	\$8,673
	Total	\$22,074,737	\$19,518,612	\$15,243,772	\$13,314,556	\$12,103,787
MA	BOSTON AND SOUTH SHORE	\$7,592,991	\$9,517,082	\$9,907,935	\$12,046,260	\$11,234,338
	CAPE AND ISLANDS	\$9,267,111	\$13,417,925	\$10,727,904	\$10,227,461	\$8,950,480
	GLOUCESTER AND NORTH SHORE	\$19,301,382	\$28,464,975	\$26,324,319	\$27,682,206	\$25,565,013
	NEW BEDFORD COAST	\$39,369,798	\$43,178,981	\$36,815,661	\$32,397,871	\$30,698,621
	Total	\$75,531,282	\$94,578,964	\$83,777,928	\$82,353,799	\$76,448,453
NH	COASTAL NH	\$5,404,665	\$5,816,870	\$4,638,745	\$4,038,530	\$4,182,535
RI	COASTAL RI	\$25,023,406	\$26,641,997	\$28,267,431	\$20,895,853	\$20,972,620
NJ	NORTHERN COASTAL NJ	\$7,814,960	\$10,905,698	\$8,977,443	\$8,239,473	\$7,400,068
	SOUTHERN COASTAL NJ	\$5,024,150	\$3,147,760	\$3,045,396	\$3,912,248	\$5,129,592
NJ	Total	\$12,839,111	\$14,053,459	\$12,022,838	\$12,151,721	\$12,529,660
NY	LONG ISLAND NY	\$13,134,080	\$13,679,255	\$13,579,440	\$11,129,898	\$10,364,426
	NY	\$375,577	\$175,014	\$58,702	\$330,767	\$49,460
NY	Total	\$13,509,657	\$13,854,269	\$13,638,142	\$11,460,665	\$10,414,399
Other		\$20,593,818	\$20,097,790	\$17,307,426	\$13,706,217	\$13,156,440
Total		\$161,467,018	\$180,707,691	\$161,258,141	\$147,249,497	\$141,397,879

6.6.4 Status of Proposed Groundfish Sector Membership

Amendment 16 established 17 new sectors and reauthorized the two existing sectors. People who held groundfish permits were required to sign up for sectors by September 1st, 2009. The following section presents an overview of sector membership as of the September 2009 registration date. However, there are no regulations that require NMFS to hold any person to sector membership prior to May 1st of 2010, so anyone is allowed to leave a sector for the common pool prior to that date unless bound by a private contract with the sector. The actual number of people fishing in sectors in 2010 is therefore subject to change. NMFS recently announced that permit owners can choose to join a sector until November 20th, 2009.

Roughly half of the groundfish permits have chosen to remain in the common pool (757 of 1480). The sector with the greatest number of permits is the Sustainable Harvest Sector (93 permits), followed closely by the GB Cod Fixed Gear Sector (88 permits). The NEFS XII has the smallest number of permits with 10. The common pool has the most Category A DAS allocated under Amendment 16 (3601.2 days), while the Northeast Coastal Communities Sector has the least (143 days). Permits that have signed up for the common pool are associated with vessels that have a

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smaller average base length (39.7 ft.) than any sector except the GB Cod Fixed Gear Sector. The sector with the largest average base length for vessels is the NEFS IX (81.1 ft.).

Table 59 – Status of sector membership as of September 1st, 2009, with respect to A16 A DAS, number of permits, and average base length

SECTOR NAME	Sum of A16 Category A DAS	Number of Permits	Average Base Length (in ft.)
Common Pool	3601.2	757.0	39.7
GB Cod Fixed Gear Sector	1470.3	88.0	38.5
Northeast Coastal Communities Sector	143.0	19.0	40.2
NEFS II	1736.3	75.0	52.6
NEFS III	1453.1	74.0	40.2
NEFS IV	1152.6	47.0	54.4
NEFS IX	1134.2	44.0	81.1
NEFS V	798.6	39.0	66.2
NEFS VI	588.0	21.0	71.0
NEFS VII	660.7	25.0	79.7
NEFS VIII	567.1	22.0	79.2
NEFS X	663.8	33.0	46.1
NEFS XI	1047.0	47.0	43.1
NEFS XII	210.0	10.0	43.6
NEFS XIII	703.2	31.0	75.3
Port Clyde Community Groundfish Sector	762.0	39.0	42.3
Sustainable Harvest Sector	2753.0	93.0	68.2
Tri-State Sector	419.1	16.0	65.7
Grand Total	19863.1	1480.0	47.6

The state with the greatest number of permits in the common pool is Massachusetts (291 permits). The next states with the most common pool permits are New York (100), Maine (91), and New Jersey (88).

Table 60 – Common pool owner mailing addresses, state and number of permits

CT	17
DE	2
FL	2
GA	1
MA	291
MD	6
ME	91
NC	12
NH	37
NJ	88
NY	100
RI	65
VA	17

Of the vessels in the common pool, 477 have no DAS allocated. The remaining 280 permits have 3,601 DAS, or an average of 12.8 DAS. The distribution of DAS is shown in Table 6 – 93 percent of common pool vessels have 20 DAS or fewer. Of the 280 permits with DAS, 105 did not land a

single GOM cod during the qualification period. Permits that did land GOM cod during the qualification period have 2,572 DAS.

Table 61 - Category A DAS allocated to common pool vessels

<i>Cat A DAS Allocated</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	477	63.10%
>0 – 10	116	78.44%
> 10 – 20	112	93.25%
> 20 – 30	48	99.60%
> 30 – 40	3	100.00%
50	0	100.00%
More	0	100.00

The size distribution (permit baseline length) of vessels in the common pool that have DAS is similar to the size of all vessels eligible for sectors, but the common pool actually has a smaller percentage of large vessels (Table 62).

Table 62 – Baseline length of permits in common pool and all permits

Common Pool			All Permits	
Length	Frequency	Cumulative %	Frequency	Cumulative %
0	0	0.00%	0	0.00%
> 0 - 30	15	5.38%	68	5.11%
> 30 - 50	137	54.48%	677	55.93%
> 50 -75	100	90.32%	362	83.11%
More	27	100.00%	225	100.00%

The vessels that are in the common pool based on September 1, 2009 rosters have small PSCs for pollock. This suggests these permits do not have a history of targeting pollock in the past. It is unclear whether these vessels will choose to target a low value species like pollock under the proposed effort controls.

Table 63 – Distribution of FY 2010 pollock ACE/DAS for permits eligible to join sectors

<i>Pollock/DAS</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	83	8.57%
250	679	78.72%
500	83	87.29%
1000	62	93.70%
1500	27	96.49%
2000	15	98.04%
More	19	100.00%

The total PSC for allocated multispecies stocks for each sector is shown in Table 64. NEFS II, III, and XI and the Sustainable Harvest Sector have the largest shares of GOM cod. GB cod allocations are largest for the GB Cod Fixed Gear Sector, NEFS IX, and the Sustainable Harvest Sector. The largest GOM haddock allocations are to the NEFS II and III sectors and the Sustainable Harvest Sector. GB Haddock allocations are largest for the NEFS II, XIII, and Sustainable Harvest Sectors. NEFS II and XI and the Sustainable Harvest Sectors have the largest allocations of pollock.

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Table 64 – Total PSC allocations for sectors according to September 1, 2009 membership rosters

SECTOR NAME	GOM Cod	GB Cod	GOM Haddock	GB Haddock	CCGOM YTF	GB YTF	SNE/MA YTF	Pollock	Redfish	White Hake	Plaice	GOM Winter Flounder	GB Winter Flounder	Witch Flounder
Common Pool	0.0738	0.0506	0.0475	0.0279	0.0672	0.0648	0.2735	0.0431	0.0341	0.0474	0.0645	0.1649	0.0297	0.0495
GB Cod														
Fixed Gear	0.0190	0.2796	0.0129	0.0640	0.0183	0.0001	0.0018	0.0780	0.0289	0.0592	0.0055	0.0224	0.0003	0.0080
Northeast Coastal Communities	0.0051	0.0016	0.0025	0.0012	0.0046	0.0084	0.0053	0.0046	0.0048	0.0090	0.0024	0.0047	0.0007	0.0027
NEFS II	0.1894	0.0547	0.1767	0.1163	0.1932	0.0170	0.0164	0.1226	0.1654	0.0610	0.0836	0.1988	0.0167	0.1327
NEFS III	0.1539	0.0106	0.1085	0.0016	0.0892	0.0005	0.0040	0.0679	0.0113	0.0451	0.0423	0.1081	0.0003	0.0291
NEFS IV	0.0855	0.0471	0.0659	0.0542	0.0719	0.0216	0.0268	0.0562	0.0638	0.0785	0.0857	0.0763	0.0071	0.0912
NEFS IX	0.0164	0.1197	0.0475	0.0997	0.0918	0.1672	0.0645	0.0372	0.0578	0.0407	0.0721	0.0255	0.3245	0.0747
NEFS V	0.0025	0.0306	0.0068	0.0552	0.0170	0.0943	0.2534	0.0055	0.0060	0.0052	0.0262	0.0071	0.0244	0.0290
NEFS VI	0.0213	0.0273	0.0356	0.0295	0.0226	0.0210	0.0490	0.0378	0.0561	0.0437	0.0412	0.0339	0.0270	0.0471
NEFS VII	0.0058	0.0614	0.0064	0.0517	0.0526	0.1690	0.0449	0.0077	0.0054	0.0077	0.0423	0.0323	0.1755	0.0411
NEFS VIII	0.0047	0.0736	0.0020	0.0661	0.0729	0.1593	0.0596	0.0064	0.0044	0.0051	0.0244	0.0336	0.2063	0.0313
NEFS X	0.0428	0.0079	0.0212	0.0068	0.0966	0.0134	0.0096	0.0141	0.0056	0.0091	0.0129	0.1195	0.0068	0.0192
NEFS XI	0.1368	0.0040	0.0323	0.0004	0.0221	0.0000	0.0001	0.0928	0.0188	0.0485	0.0187	0.0213	0.0000	0.0186
NEFS XII	0.0151	0.0002	0.0036	0.0000	0.0057	0.0000	0.0004	0.0014	0.0007	0.0011	0.0043	0.0043	0.0002	0.0033
NEFS XIII	0.0075	0.0732	0.0059	0.1342	0.0315	0.1397	0.0983	0.0218	0.0447	0.0177	0.0337	0.0149	0.1002	0.0446
Port Clyde Community														
Groundfish Sustainable Harvest	0.0464	0.0020	0.0231	0.0005	0.0071	0.0000	0.0065	0.0429	0.0255	0.0461	0.0630	0.0179	0.0001	0.0434
Tri-State	0.1601	0.1452	0.3520	0.2724	0.0982	0.0696	0.0802	0.3474	0.4562	0.4191	0.3416	0.0575	0.0639	0.3021
Tri-State	0.0141	0.0108	0.0495	0.0184	0.0375	0.0541	0.0055	0.0127	0.0104	0.0557	0.0356	0.0571	0.0163	0.0324
Total	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

6.6.5 Economic Status of Scallop Fleet

6.6.5.1 Trends in Landings, prices and revenues

In the fishing years 2002-2007, the landings from the northeast sea scallop fishery stayed above 50 million pounds, surpassing the levels observed historically (Figure 10). The recovery of the scallop resource and consequent increase in landings and revenues was striking given that average scallop landings per year were below 16 million pounds during the 1994-1998 fishing years, less than one-third of the present level of landings. The increase in the abundance of scallops coupled with higher scallop prices increased the profitability of fishing for scallops by the general category vessels. As a result, general category landings increased from less than 0.4 million pounds during the 1994-1998 fishing years to more than 5 million pounds during the last three fishing years (2005-2007), peaking at 7 million pounds in 2005 or 13.5% of the total scallop landings.

Figure 10 - Scallop landings by permit category and fishing year (dealer data)

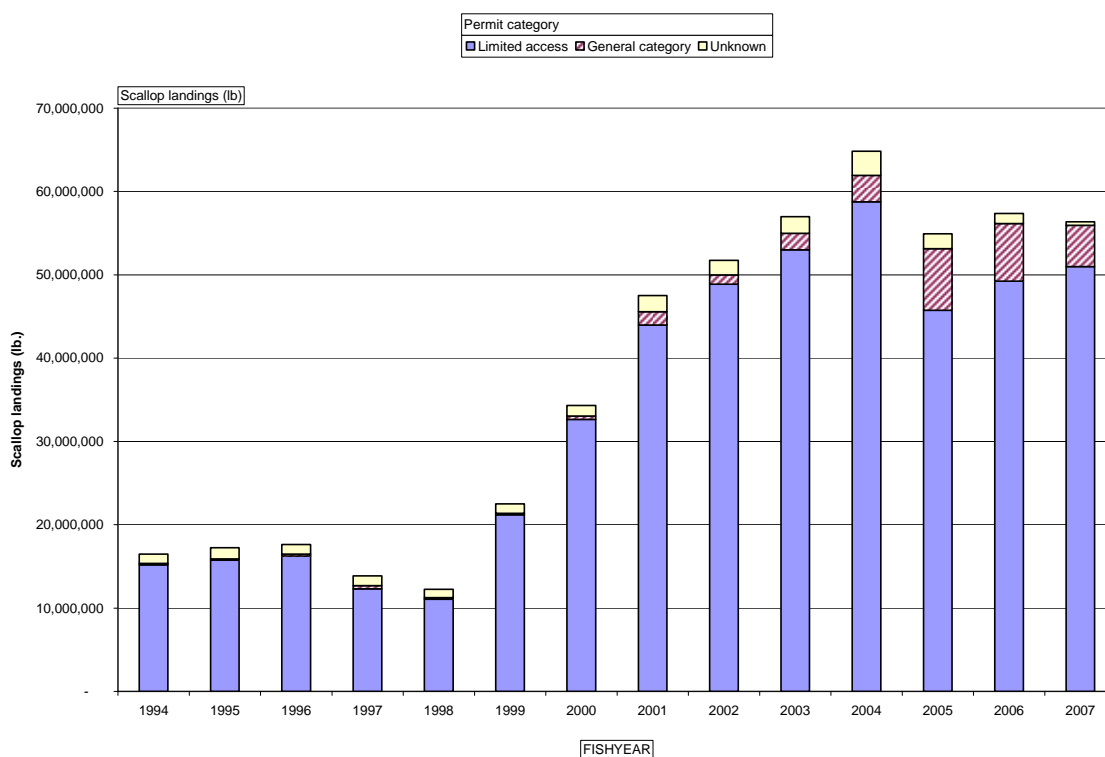


Figure 11 shows that total fleet revenues for the limited access vessels tripled from about \$100 million in 1994 to over \$300 million in 2007 in inflation-adjusted 2006 dollars. Scallop ex-vessel prices increased after 2001 as the composition of landings changed to larger scallops that in general command 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 and in fact, the inflation adjusted ex-vessel price of scallops in 2007 was lower than the price in 1994. 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 12 shows that average landings and revenue per limited access vessel more than doubled in recent years compared to the period 1994 -1998. The number of active vessels increased by 50 % (from about 220 in 1994 to 346 in fishing year 2007) resulting in tripling of total fleet scallop landings and revenue in 2007 compared to 1994 (Figure 12).

Figure 11 - Trends in total scallop landings, revenue and ex-vessel price by fishing year (limited access fishery only)

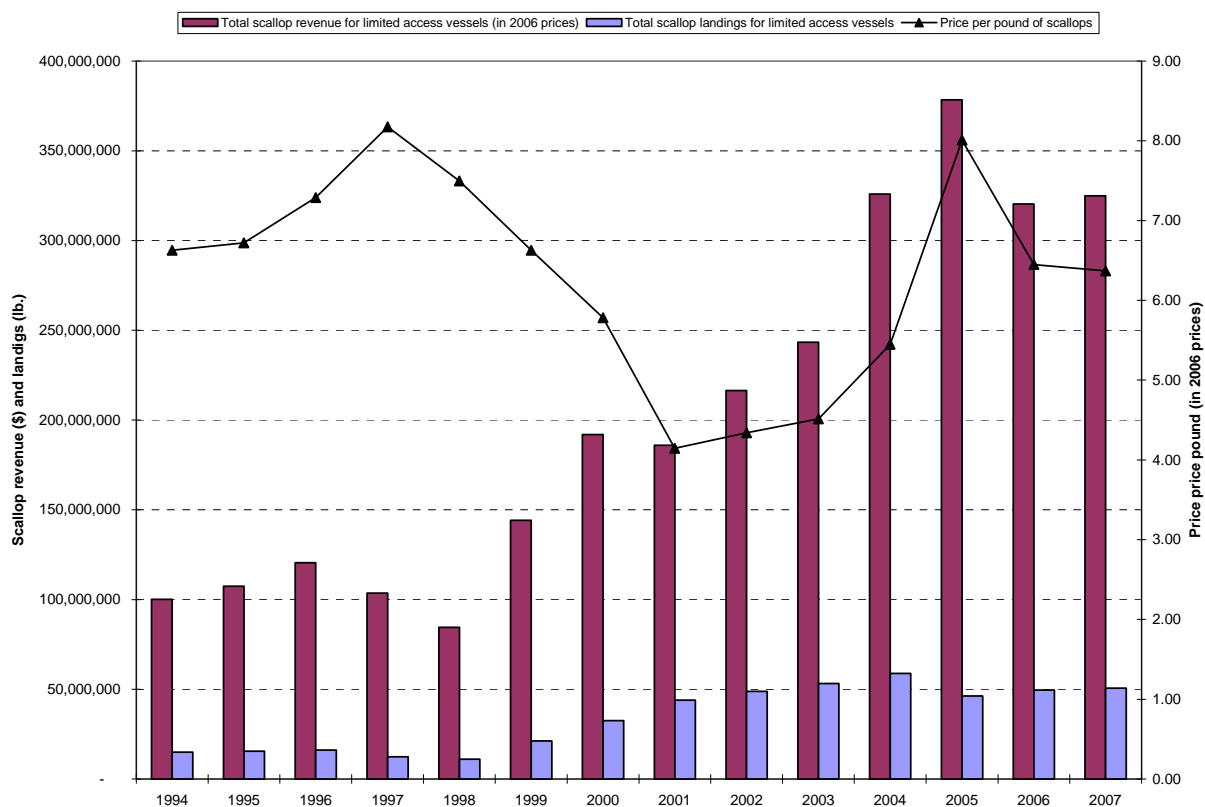
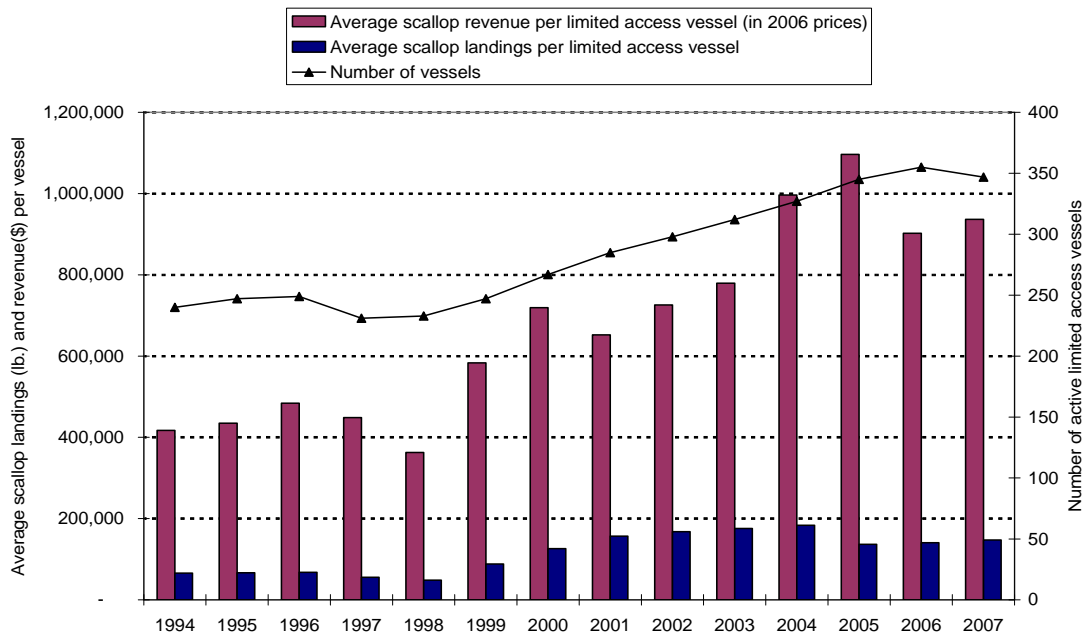


Figure 12 - Trends in average scallop landings and revenue per full time vessel and number of active vessels (including full-time, part-time and occasional vessels)

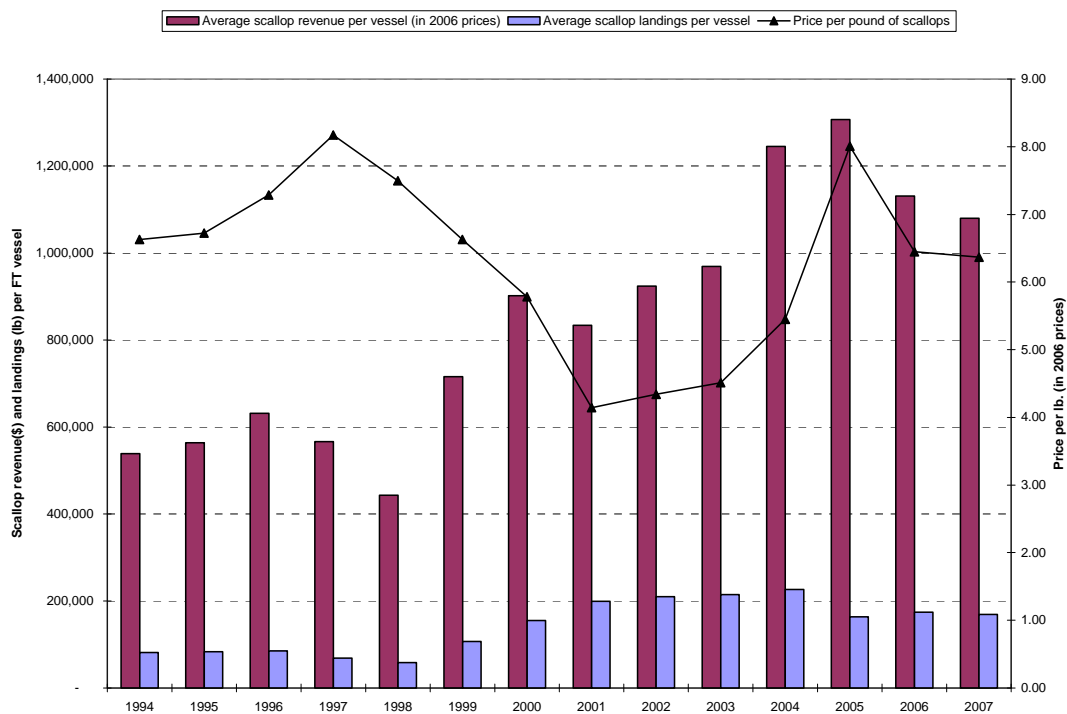


The trends in revenue per full-time vessel were similar to the trends for the fleet as a whole. The following analyses show the trends for 124 full-time vessels that were active in the scallop fishery for 14 years; that is, for every year from fishing year 1994 to the end of fishing year 2007. In addition, each vessel in this group used more than 50% of their DAS allocation, and average HP was 904 and GRT was 167 for this group of vessels. This group was selected so that the average trends will not be biased by including vessels that participated in the fishery only a few years, mainly in the recent years. For example, there were about 56 full-time vessels that were active for 4 years or less as of the 2006 fishing year. These vessels had a lower fishing power (smaller HP and GRT) and consequently had lower revenues and profits than the 124 full-time vessels included in the sample. Including these smaller vessels would reduce the average profits and revenues in the recent years relative to the earlier fishing years and would underestimate the increase in average profit per full-time vessel in recent years. Similarly, the full-time vessels that used less than 50% of their DAS allocation either because of choice or because of data inaccuracies are not included in the sample group of full-time vessels, because including them would either underestimate the average revenue or trip costs per vessel, resulting in lower profits in the first and higher profits in the second case.

Figure 13 shows that average scallop revenue per full-time vessel in the sample of 124 vessels doubled from about \$538,000 in 1994 to over 1,080,000 in 2007 despite the fact that inflation adjusted ex-vessel price per pound of scallops was slightly higher in 1994 (\$6.60 per pound) compared to the ex-vessel price in 2007 (\$6.40 per pound). In other words, the doubling of revenue was the result of the doubling of the average scallop landings per vessel in 2007 (over 169,000 pounds) from its level in 1994 (over 81,500 pounds). The total fleet revenue for all the limited access vessels more than tripled during the same years as new vessels became active. Average scallop revenue per full-time vessel peaked in the 2005 fishing

year to over \$1.3 million as a result of higher landings combined with an increase in ex-vessel price to about \$8.00 per pound of scallops.

Figure 13 - Trends in average scallop landings and revenue per full time vessel (sample of 124 vessels)



6.6.5.2 Trends in effort

6.6.5.2.1 Trends in DAS-used

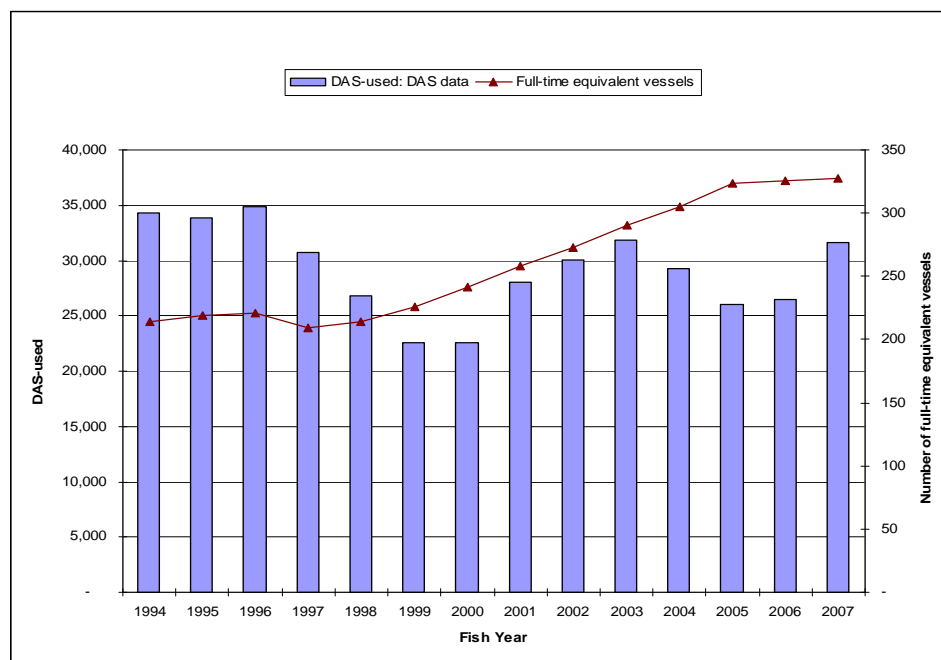
There has been a steady decline in the total DAS used by the limited access scallop vessels from the 1994 to 2001 fishing years as a result of the effort-reduction measures of Amendment 4 (1994) and Amendment 7 (1999)). DAS allocations during this period were reduced almost by half from 204 DAS in 1994 to 120 DAS for the full-time vessels and in the same proportions for the part-time and occasional vessels from their base levels in 1994 (Table 65). As a result, DAS used reached the lowest levels of about 22,550 days in the 1999 and 2000 fishing years from about 34,000 days in 1994, even though the number of full-time equivalent vessels increased during these years from 214 vessels in 1994 to 241 vessels in 2000 (Figure 14). Average DAS used per full-time vessel declined from 161 days in 1994 to 93 days in 2000. The low levels of resource abundance discouraged many vessels from fishing for scallops during those years.

Table 65 - DAS and trip allocations per full-time vessel

Year	Allocations based on the Management Action	Total DAS Allocation (1)	Estimated Open area DAS allocations (2)	Access area trip allocations (3)	DAS charge or equivalent per access area trip (4)	Equivalent (estimated) DAS allocation for access areas (5)
1994	Amendment 4	204	None	None		None
1995	Amendment 4	182	None	None		None
1996	Amendment 4	182	None	None		None
1997	Amendment 4	164	None	None		None
1998	Amendment 4	142	None	None		None
1999	Amendment 7, Framework 11	120	90 to 120	3	10	0 to 30
2000	Framework 13	120	60 to 120	6	10	0 to 60
2001	Framework 14	120	90 to 120	3	10	0 to 30
2002	Framework 14	120	90 to 120	3	10	0 to 30
2003	Framework 15	120	90 to 120	3	10	0 to 30
2004	Framework 16	126	42 (MAX.62)	7	12	84
2005	Framework 16	100	40 (MAX.117)	5	12	60
2006	Framework 18	112	52	5	12	60
2007	Framework 18	111	51	5	12	60

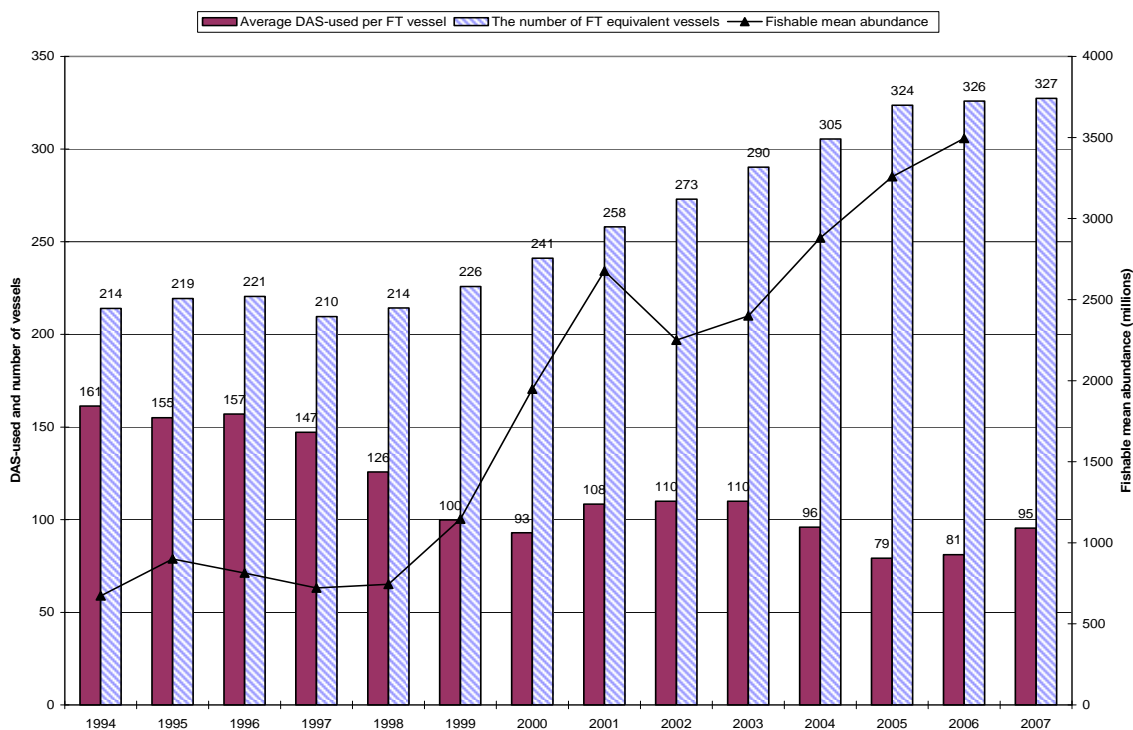
(1) Total DAS allocation per full-time vessel represents a rough estimate for years 2004-07 since DAS is allocated for open areas only. DAS allocation for access areas is estimated by assuming an equivalent 12 days-at-sea allocation for each access area trip with a possession limit of 18,000 pounds

Figure 14 -Total DAS-used and the number of active (full-time equivalent) vessels in the sea scallop fishery



After fishing year 2000, fishing effort started to increase as vessels spent more DAS and more limited access vessels participated in the sea scallop fishery. The increase in total effort was mostly due to the increase in the number of vessels. The DAS used per full-time vessel increased to 110 days during 2002-2003 fishing years from 93 days in 2000. This level was still significantly lower than DAS used in the mid-1990s (over 150 days, Figure 15). During those years there was no change in the total DAS allocations (120 DAS per full-time vessel). The recovery of the scallop resource and the dramatic increase in fishable abundance after 1999 increased the profits in the scallop fishery, thus leading to an increase in participation by the limited access vessels that had been inactive during the previous years. Georges Bank closed areas were opened to scallop fishing starting in 1999 by Framework 11 (CAII) and later by Framework 13 (CAII, CAI, NLS), encouraging many vessel owners to take the opportunity to fish in those lucrative areas. Frameworks 14 and 15 provided controlled access to Hudson Canyon and VA/NC areas. As a result, 49 new full-time equivalent vessels became active in the sea scallop fishery after 2000 during the next three fishing years. The total number of full-time equivalent vessels reached to 290 in 2003 and total fishing effort by the fleet increased to 31,800 days in 2003 from about 22,600 in 2000 (Figure 14).

Figure 15 - Average DAS-used per full-time vessel, the number of full-time equivalent active vessels and fishable mean abundance in the sea scallop fishery (excluding general category fishery)



Total fishing effort (DAS-used) declined after 2003 even though the number of active vessels increased to 326 vessels in 2006 from 290 vessels in 2003. With the implementation of Amendment 10 (2004) the limited access vessels were allocated DAS for open areas and a number of trips for the specific access areas with no open area trade-offs. The open area allocations were reduced to 42 DAS in 2004 whereas full-time vessels were allocated 7 access area trips in the same year (Table 65, Framework 16). Even

though total DAS equivalent allocations remained around the same levels during 2005-07 (at about 110 equivalent days, Table 65), the fishing effort, i.e., fleet DAS used increased in the 2007 fishing year as many vessels took their unused 2005 HCA trips in that year. If not for those HCA trips, the total effort in the scallop fishery would probably have stayed constant during 2005-2007 with almost all qualified limited access vessels participating in the fishery.

6.6.5.2.2 Effort by open and access areas

Until 2004, DAS was allocated for the whole fishing area. Starting with Framework 16, DAS was allocated for the open areas only whereas for access areas the vessels received trip allocations. The unused Georges Bank controlled access area trips could be transferred to open areas due to the closure of access areas when yellowtail flounder catch reaches annual TAC. For example, a vessel that has taken two of three controlled access trips, may fish for 12 additional DAS in the open areas (totaling 42+12=54 DAS for the fishing year). In 2004, the DAS allocation for open areas without access trips was 62 days, meaning that a vessel can transfer no more than 20 DAS from a closed controlled access to open areas. So a vessel that has taken only one of three or has not yet fished in a closed controlled access area, may transfer no more than 20 DAS to the open areas, totaling 62 open area DAS for the fishing year. Table 65 provides the maximum number of DAS that could have been used in open areas due to transferring DAS from unused controlled access trips. DAS transfers were allowed only for the Georges Bank access areas and would exclude Mid-Atlantic access areas. As a results of these transfers and carry-over DAS used by some vessels, average open area DAS-used by full-time vessels were about 52 days in 2004, and 44 days in 2005, higher than the base open area allocations in either year.

Table 66 - DAS-used and the number of trips by full-time vessels by area

AREA	DATA	FISHYEAR			
		2004	2005	2006	2007
ACCESS	Allocated number of trips	7	5	5	5
	Average DAS-used per vessel	45	37	30	49
	Average number of trips per vessel	6	5	5	8 *
	Average trip length	8	8	6	6
	Total number of trips	1636	1371	1386	2390
	Total DAS-used	12864	11039	8681	15492
	Number of full-time vessels fished	289	302	289	317
OPEN	DAS allocation per vessel	42	40	52	51
	Average DAS-used per vessel	52	44	54	46
	Number of trips	8	8	7	6
	Average trip length	8	7	8	9
	Total number of trips	2214	2360	2261	1749
	Total DAS-used	15328	13656	16915	14620
	Number of full-time vessels fished	293	312	317	319
ALL AREAS	Average DAS used per vessel	97	81	84	95
	Total DAS-used	28192	24695	25596	30112
	Total number of active vessels	293	312	317	319

(*) Because of carry-over trips taken in HCA in 2007, number of trips is greater than the number of allocated trips. See Table 68 below.

Framework 16 allocated 4 trips to HCA in 2004 and 3 trips to HCA in 2005 (18,000 pounds each). Because the catch rates were lower than expected in this area, many vessels chose to delay taking their 2005 access trips. For example, Table 68 shows that only 237 out of 312 active full-time vessels took some of their trips to HCA in 2005, averaging about 2.5 trips per vessel. Framework 18 extended

Hudson Canyon access program – such that vessels that did not take their HC trips could take them in either 2006 and/or 2007. Many of these vessels postponed taking those trips until 2007. The number of trips shown could be larger than allocated since some of these trips are compensation trips. The use of HC trips in 2007 is the major reason behind the increase in total effort in 2007 compared to 2006 given that DAS allocations, number of access area trip allocations and the number of active vessels were similar in each year. Table 68 shows that about 5,500 DAS-used in HCA in 2005 which is almost equal to the difference in total effort in 2006 and 2007 fishing years. It also explains that on the average there were more access area trips taken per vessel in 2007 than the allocated 5 trips per vessel by F18. (8 trips per vessel that used that fished in the access areas whereas only 5 trips were allocated by Framework 18). Again, the inclusion of the compensation trips probably overestimates the number of HCA and other access area trips per vessel in Table 66 and Table 68 .

Table 67 - Framework 18 DAS and access area trip allocations

Framework 18 allocations	Open area DAS per FT vessel	Controlled access area trips	Elephant Trunk	Hudson Canyon	Delmarva	Total DAS per FT vessel
DMV - 20K open area DAS in 2006 and 2007 (Proposed Alternative)						
2006	52	1 CAI, 2 CAII, 2 NLS (60 DAS)	Closed	2005 trips	Open	112
2007	51	1 CAI, 1 NLS, 3 ETA (84 DAS)	5 trips*	2005 trips	Closed	111

*Originally F18 allocated 5 trips to ETA which were reduced later to 3 by emergency action.

Table 68 - DAS-used and the number of trips by full-time vessels in Hudson Canyon Access Area

Fishyear	Number of trips per vessel	Average DAS-used per vessel	Total DAS-used	Total number of trips	Number of full-time vessels fished
2004	4.1	34.0	9734	1163	286
2005	2.6	26.1	6181	605	237
2006	1.7	12.2	709	99	58
2007	2.8	24.0	5501	633	229

6.6.5.2.3 Trends in effective fishing effort and vessel characteristics

Figure 16 - Number of limited access vessels by permit category

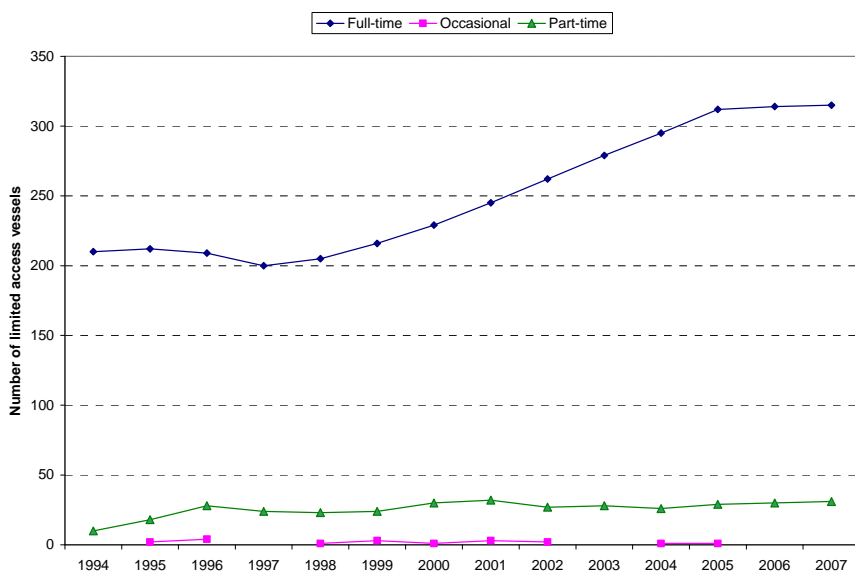


Figure 17 - Number of full-time vessels by permit category

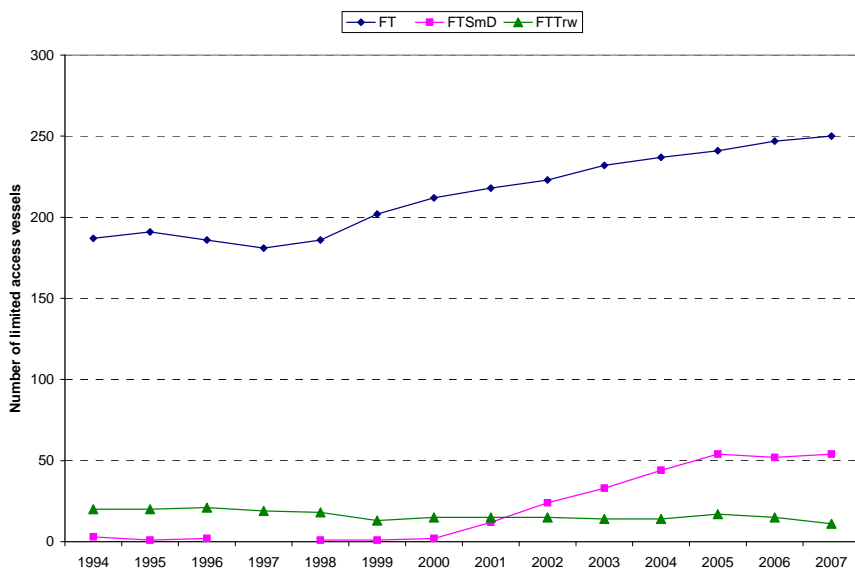
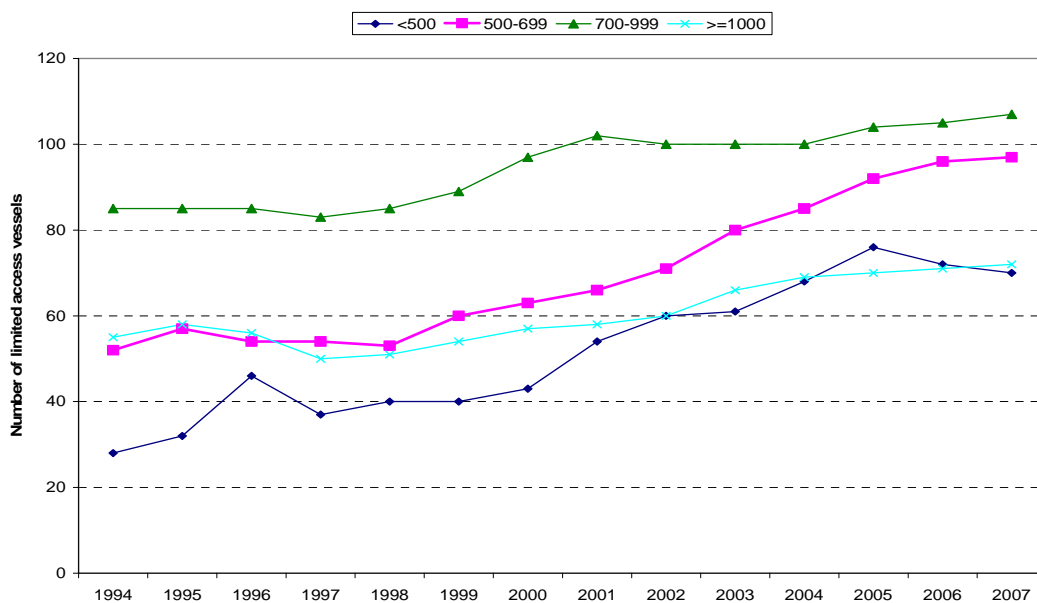


Figure 18 - Number of limited access vessels by horsepower (including part-time and occasional vessels)



The majority of the small dredges had a horsepower of less than 500.

Table 69 - Number of limited access vessels by years active

Number of vessels	Years Active				
FISHYEAR	<5 years	5-9 years	10-13 years	14 years	Grand Total
1994	28	22	40	150	240
1995	22	24	51	150	247
1996	20	24	55	150	249
1997	6	22	53	150	231
1998	1	28	54	150	233
1999	3	35	59	150	247
2000	4	47	66	150	267
2001	4	67	64	150	285
2002	3	79	66	150	298
2003	4	92	66	150	312
2004	27	88	62	150	327
2005	55	86	54	150	345
2006	75	84	46	150	355
2007	84	79	34	150	347

There is a slight difference in the trend for fishing effort weighted by horsepower from the total fleet DAS-used as Figure 20. Average HP, GRT and crew declined slightly from 1994 to 2007 because more small vessels became active in the fishery, reducing marginally the rise of HP weighted DAS-used compared to the total DAS-used in 2007 (Figure 19).

Figure 19 - Average HP, GRT and crew size of limited access vessels

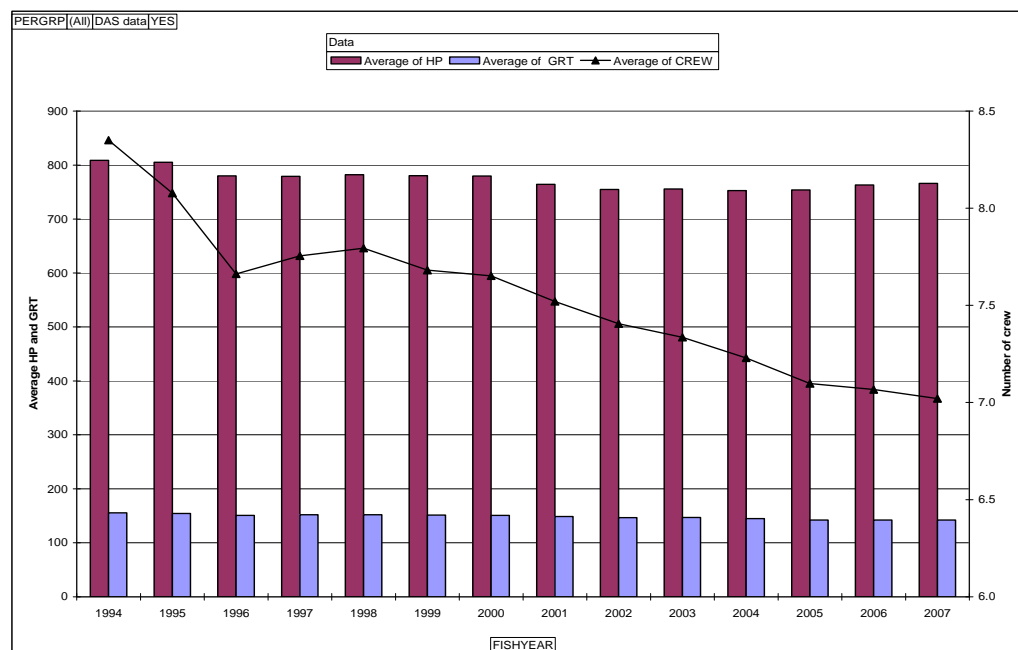
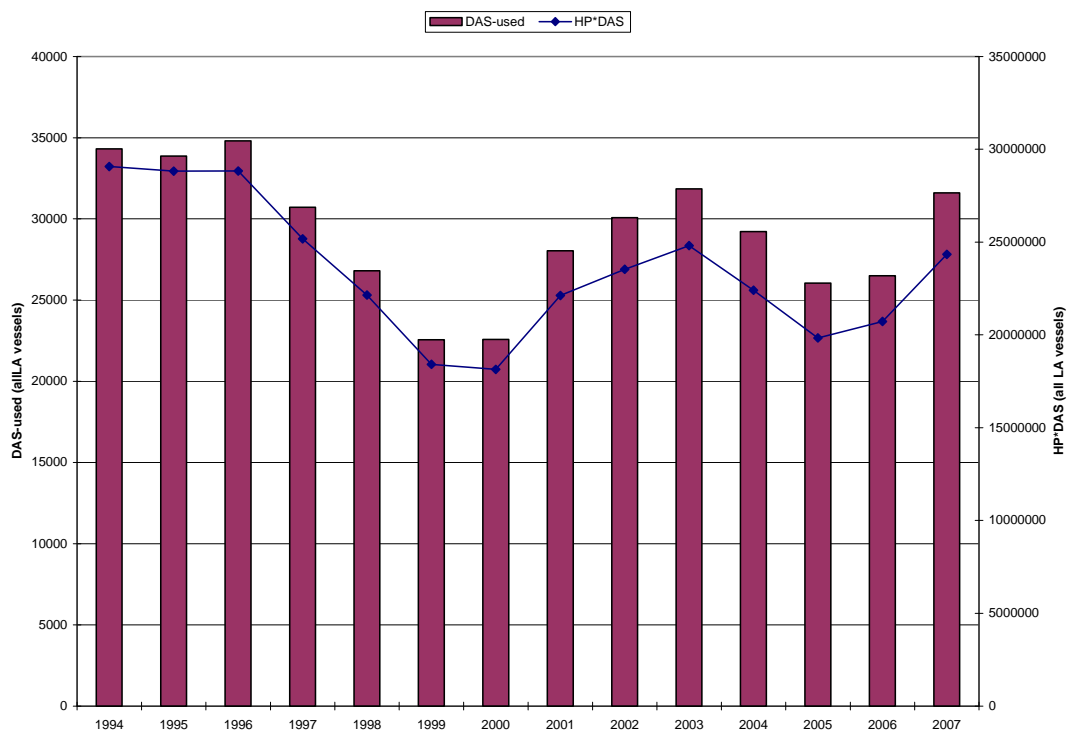


Figure 20 - Trends in fishing effort by limited access vessels



6.6.5.3 Trends in Biomass, LPUE and Participation

The annual average LPUE increased constantly after 1998 as the scallop resource recovered and fishable mean biomass increased from about 750 million in 1998 to over 3500 million in 2006 (Figure 21). Average LPUE for a full-time increased from 540 pounds per DAS in 1994 to over 2000 pounds per day in 2004, but declined afterwards to 1,700 pounds per DAS in 2007 (Table 70). The increased in scallop abundance provided incentive for new limited access vessels to participate in the fishery especially after 1999 fishing year, probably having a negative impact on the LPUE per vessel due to the increased competition for fish although the extent of this impact requires more analysis.

Figure 21 - Fishable biomass, LPUE (annual landings/ DAS) and number of limited access vessels (all vessels)

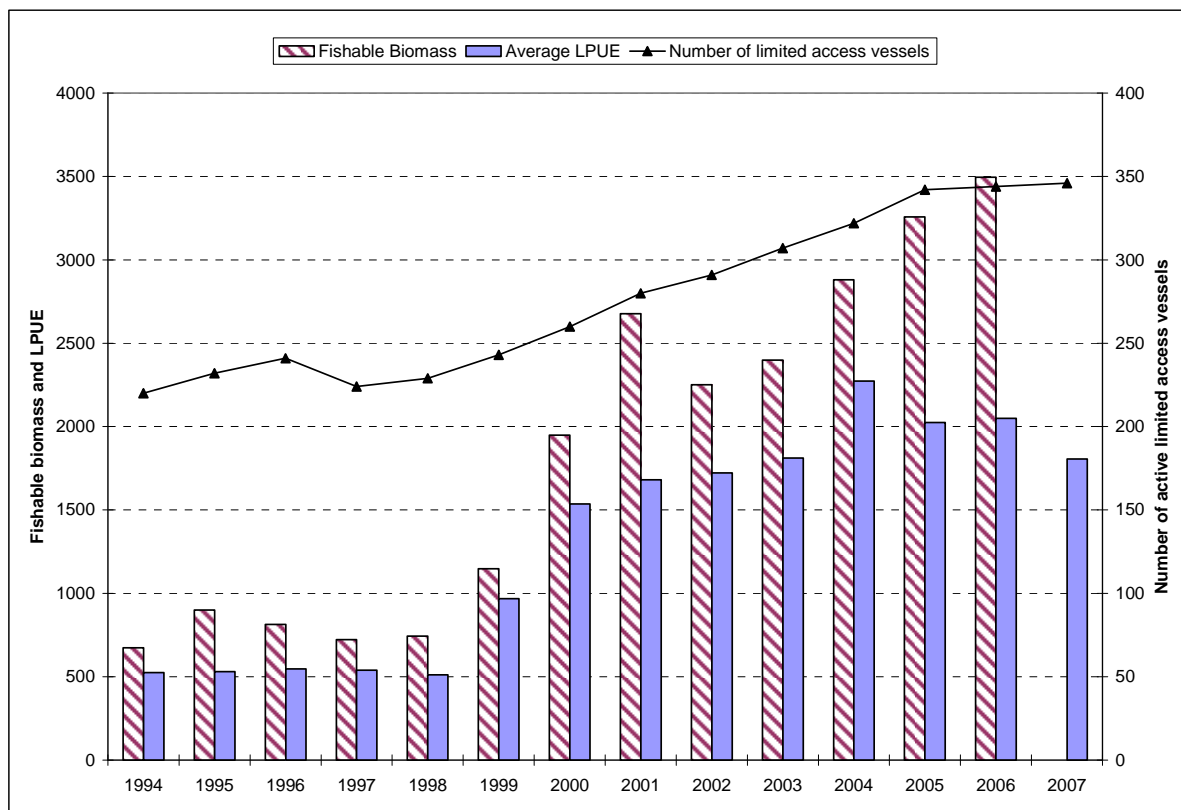


Table 70 - Trends in LPUE for full-time vessels (including small dredge and scallop trawls) and fishable mean abundance

FISHYEAR	FT vessels that landed an average of less than 400 pounds of scallops per DAS as an average per year (Group A)	FT vessels that landed 400 pounds or more scallops per DAS as an average per year (Group B)	Average LPUE per full-time vessel (includes all vessels in Groups A and B)	Average LPUE per full-time vessel that landed 400 pounds or more scallops per DAS (Group B)	Maximum LPUE (Rounded numbers) All FT vessels)	Fishable mean abundance * (Whole stock, all sizes, millions)
1994	87	117	437	543	970	673
1995	57	148	471	540	850	900
1996	65	137	474	549	900	813
1997	107	87	414	537	1500	722
1998	97	103	416	517	750	744
1999	6	200	943	963	1800	1147
2000	Less than 5	219	1487	1504	2700	1948
2001	Less than 5	237	1604	1623	2700	2677
2002	Less than 5	254	1627	1638	3700	2250
2003	Less than 5	269	1691	1713	4700	2399
2004	6	284	2083	2124	4500	2881
2005	Less than 5	304	1856	1866	4700	3258
2006	9	302	1868	1918	4000	3495
2007	Less than 5	307	1693	1714	3800	NA

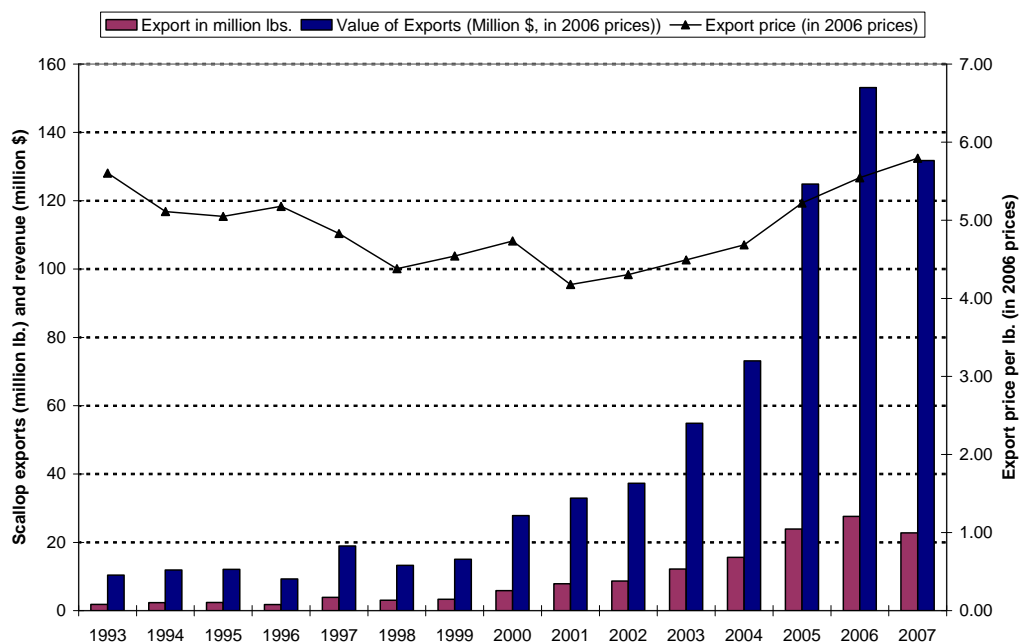
* 45th Stock Assessment Report for Atlantic Sea Scallops (Sept, 2007), Table B5-5, p.183.

6.6.5.4 Trends in foreign trade

6.6.5.4.1 Scallop Exports

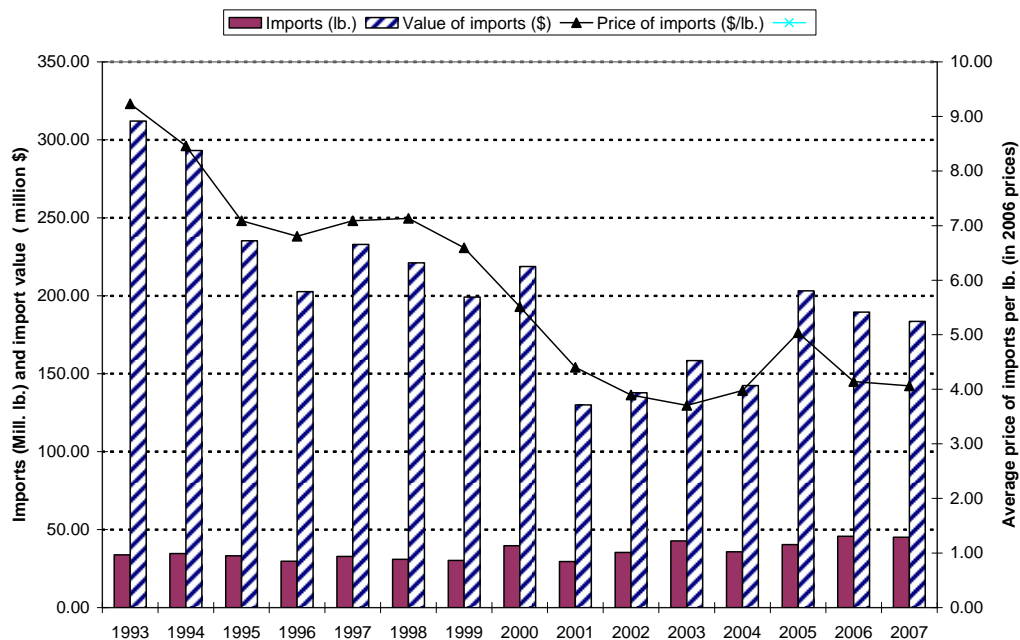
Figure 22 shows exports from NE and Mid-Atlantic ports and includes fresh, frozen and processed scallops. The exports from all other states and areas totaled only about \$1 million in 2006 and 2007, and thus was not significant.

Figure 22 - Scallop exports from New England and Mid-Atlantic (by calendar year)



6.6.5.4.2 Imports

Figure 23 - Imports, value of imports and import price of scallops (by calendar year)



6.6.5.4.3 Trends in fishing by gear type

Table 71 through Table 73 describe general category landings by gear type. These tables are generated by VTR data and since all VTR records do not include gear information, the number of vessels in these tables will differ from other tables that summarize general category vessels and landings from dealer data. Primary gear is defined as the gear used to land more than 50% of scallop pounds. Most general category effort is and has been from vessels using scallop dredge and other trawl gear (Table 71). The number of vessels using scallop trawl gear increased through 2006 but has declined in recent years. In terms of landings, most scallop landings under general category are with dredge gear (Table 2), with significant amounts also landed by scallop trawls and other trawls. Table 73 shows the percent of general category landings by primary gear and year. The percentages of scallop landings with other trawl gear in 2008 and 2009 were the highest they have been since 2001, but were still significantly less than dredge landings.

Table 71 - Number of general category vessels by primary gear and fishing year

FISHING YEAR	DREDGE, OTHER	DREDGE, SCALLOP	MISC	TRAWL, OTHER	TRAWL, SCALLOP
1994	1	33	4	42	1
1995	4	91	5	48	4
1996	7	101	13	49	1
1997	6	118	9	55	*
1998	10	100	8	52	1
1999	10	87	3	61	5
2000	7	78	9	91	3
2001	4	122	7	118	6
2002	3	147	3	104	9
2003	6	155	2	116	17
2004	8	217	10	183	35
2005	26	280	3	183	60
2006	29	366	9	159	65
2007	26	280	4	125	30
2008	9	129	5	66	21
2009	8	117	1	53	22

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Table 72 - General category scallop landings by primary gear (pounds)

FISHING YEAR	DREDGE, OTHER	DREDGE, SCALLOP	MISC	TRAWL, OTHER	TRAWL, SCALLOP
1994	111	144,139	260	9,564	2,601
1995	4,812	501,910	1,146	43,585	11,797
1996	1,352	578,884	3,314	19,460	1,644
1997	3,253	682,270	3,465	30,227	*
1998	6,049	334,930	2,443	19,677	3,750
1999	18,322	236,482	599	17,537	3,970
2000	6,446	303,168	1,411	173,827	8,179
2001	91,939	1,254,153	6,518	404,709	28,276
2002	21,888	1,266,144	919	74,686	41,977
2003	22,614	1,590,575	484	171,511	196,376
2004	36,260	2,624,753	2,259	487,620	373,980
2005	198,736	4,934,735	1,441	744,027	892,154
2006	198,400	5,607,142	8,386	418,708	599,508
2007	142,044	4,517,800	724	226,131	395,683
2008	87,186	2,593,870	1,502	528,252	287,362
2009	63,368	1,940,047	400	574,555	211,598

Table 73 - Percentage of general category scallop landings by primary gear

FISHING YEAR	DREDGE, OTHER	DREDGE, SCALLOP	MISC	TRAWL, OTHER	TRAWL, SCALLOP
1994	0.07%	92.00%	0.17%	6.10%	1.66%
1995	0.85%	89.11%	0.20%	7.74%	2.09%
1996	0.22%	95.74%	0.55%	3.22%	0.27%
1997	0.45%	94.86%	0.48%	4.20%	*
1998	1.65%	91.30%	0.67%	5.36%	1.02%
1999	6.62%	85.40%	0.22%	6.33%	1.43%
2000	1.31%	61.49%	0.29%	35.26%	1.66%
2001	5.15%	70.24%	0.37%	22.67%	1.58%
2002	1.56%	90.08%	0.07%	5.31%	2.99%
2003	1.14%	80.27%	0.02%	8.66%	9.91%
2004	1.03%	74.46%	0.06%	13.83%	10.61%
2005	2.94%	72.88%	0.02%	10.99%	13.18%
2006	2.90%	82.07%	0.12%	6.13%	8.77%
2007	2.69%	85.53%	0.01%	4.28%	7.49%
2008	2.49%	74.15%	0.04%	15.10%	8.21%
2009	2.27%	69.54%	0.01%	20.59%	7.58%

6.6.5.4.4 Trends in scallop landings by port

The landed value of scallops by port landing fluctuated from 1994 through 1998 for many ports. During the past five years, six ports brought in the most landed value: New Bedford, MA; Cape May, NJ; Newport News, VA; Barnegat Light/Long Beach, NJ, Seaford, VA, and Hampton, VA (Table 74). In addition to bringing in the most landed value, in 1994 scallop landings represented more than 30% of the total landed value for New Bedford, MA and Cape May, NJ, and more than 65% of the total landed value

for Newport News and Hampton, VA (Table 75). This has increased in 2008 to 74% and 84% for New Bedford, MA and Cape May, NJ, respectively, and 93% and 84% for Newport News and Hampton, VA, respectively.

Landed value has increased steadily from 1999-2008; but, some leveling off is apparent in recent years. In the most recent two years of data (2007-2008), 43% of ports saw a decrease in the percentage of landed scallop value to total landed value (Table 73). However, many of these decreases are very small, on the order of 1-3%.

Between 2003 and 2005, 10 ports increased their landed value for scallops, potentially from an increase in general category landings. The average landed value has increased from \$2 million in 1994 to a peak of \$12 million in 2005. In 2006-2008, the average landed value has hovered between \$9 and \$10 million.

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Table 74 - Landed value of scallops (in thousands of dollars) by port of landing, FY 1994-2008.

* Includes only ports of landings with landed value of scallops in excess of \$100,000 during FY2008. X = confidential data, with landings that are greater than 100,000 but less than 1.25 million, X* = less than 70,000. Data run August 7, 2009, based on dealer weighout data YTD.

Port and County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
New Bedford MA (Bristol County)	30981	36553	48436	45514	34687	70554	88491	80357	96011	104664	150121	206784	210517	211847	172603
Cape May NJ (Cape May County)	9360	8874	8656	6945	5588	9765	14158	18626	20237	28530	46530	51421	21619	45517	55522
Newport News VA (Newport News City)	9289	11917	13457	11173	11275	15207	23092	25535	30494	37361	48424	39467	22708	33363	37328
Barnegat Light/Long Beach NJ (Ocean County)	2653	2727	3007	3105	2693	3941	6733	6753	8071	10021	15641	21367	16651	16694	17275
Seaford VA (York County)	0	0	0	5553	4543	6540	11168	10465	11841	13043	18572	16364	11701	15340	14401
Hampton VA (Hampton City)	12425	7863	6346	3258	4557	5084	8289	9195	13803	19012	19978	14147	9180	15513	13620
Fairhaven MA (Bristol County)	0	0	0	0	0	0	0	0	0	0	0	5280	10103	8892	9166
Point Pleasant NJ (Ocean County)	315	532	1401	2207	1590	1854	3784	3197	3530	3973	3523	8574	7544	8751	8119
Stonington CT (New London County)	0	0	232	2573	2717	3302	3459	4944	5669	7463	10363	7402	4997	7680	5243
Wildwood NJ (Cape May County)	7	14	X*	0	X*	0	120	1246	2056	2194	3557	3942	2113	3690	3836
Ocean City MD (Worcester County)	11	24	43	5	15	25	118	79	99	212	174	4871	5631	2815	3504
Point Lookout NY (Nassau County)	0	0	0	0	0	0	0	0	0	0	21	33	X*	1075	3001
Avalon NJ (Cape May County)	0	0	0	0	0	0	0	0	0	0	0	X	1563	3468	2808
New London CT (New London County)	0	0	0	0	0	843	817	943	886	1026	1203	1736	1465	X	2588
Chatham MA (Barnstable County)	0	0	X*	0	0	0	X*	588	117	409	1927	2996	3154	2056	1715
Atlantic City NJ (Atlantic County)	15	1	0	0	1	0	0	X*	0	0	382	2308	2048	2706	1518
Other Connecticut (Not-Specified County)	700	1665	0	0	0	0	0	0	0	0	0	0	0	96	1421
Point Judith RI (Washington County)	1	58	4	7	X*	242	734	596	83	274	622	4638	7358	2835	1371
Montauk NY (Suffolk County)	X*	X*	X*	X*	0	7	6	8	0	1	435	1367	1878	2187	1346
Engelhard NC (Hyde County)	0	0	0	0	0	X*	X*	X*	0	140	22	124	311	709	817
Newport RI (Newport County)	23	229	101	784	534	447	700	X*	3	X*	1382	8412	13070	6031	747
Hampton Bays NY (Suffolk County)	X*	5	5	22	6	53	426	454	94	155	533	1588	846	422	574
Belford NJ (Monmouth County)	X*	X*	X*	21	X*	3	2	X*	X*	X*	X*	33	X*	16	548
Other Atlantic NJ (Atlantic County)	387	0	0	0	0	0	0	0	0	0	0	134	874	1017	542
Chincoteague VA (Accomack County)	2	0	X*	0	X*	7	210	803	1115	1957	4058	11892	7253	1153	489
New Haven CT (New Haven County)	0	0	X*	0	X*	0	0	0	0	0	0	0	0	0	X
Gloucester MA (Essex County)	X*	X*	232	357	104	161	1014	1543	783	557	682	1217	890	487	352
Sandwich MA (Barnstable County)	23	37	284	128	243	213	157	218	249	266	136	243	403	707	337
Provincetown MA (Barnstable County)	45	24	92	97	114	57	120	2130	540	648	637	1684	1046	595	320
Other Cape May NJ (Cape May County)	0	0	0	0	0	0	0	0	X*	0	0	X*	825	104	X
Indian River DE (Sussex County)	0	0	0	0	0	0	0	0	0	0	0	X*	114	1	245
Wellfleet MA (Barnstable County)	0	X*	X*	70	X*	23	X*	66	32	112	47	284	64	X*	244

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Other Monmouth NJ(Monmouth County)	0	0	0	0	0	0	0	0	0	0	0	X*	X	X	X
Hyannisport MA (Barnstable County)	0	0	0	0	0	0	0	0	0	0	30	648	473	262	222
Addison ME (Washington County)	0	0	0	X	X	0	0	0	X	0	X	X	49	268	151
Nantucket MA (Nantucket County)	5	X*	8	X*	1	0	X	X*	X*	2	58	282	187	195	129
Harwich Port MA (Barnstable County)	0	0	0	0	0	0	0	590	110	318	462	770	115	171	X
Wanchese NC (Dare County)	0	0	0	X*	0	31	64	1350	1023	262	382	75	127	X*	X
Shinnecock Hills NY (Suffolk County)	0	0	0	0	0	0	0	0	0	0	X*	317	210	44	118
Bucks Harbor ME (Washington County)	0	0	0	0	0	0	0	0	0	3	0	0	X	0	111
Barnstable MA (Barnstable County)	0	0	0	0	0	0	0	0	0	0	31	184	607	326	108
Falmouth MA (Barnstable County)	0	0	0	0	0	0	X*	0	X*	X*	X*	71	36	235	X

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Table 75 - Percentage of landed value of scallops to total landed value by port of landing, FY 1994-2006

* Includes only ports of landings with landed value of scallops in excess of \$100,000 during FY2008. Data run August 2, 2007, based on dealer weighout data YTD.

Port Name	County	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
NEW BEDFORD	BRISTOL	39	41	45	44	36	53	57	53	58	58	70	75	77	76	74
CAPE MAY	CAPE MAY	33	33	35	29	23	44	59	68	69	76	75	81	71	80	80
NEWPORT NEWS	NEWPORT NEWS (CITY)	67	71	76	73	73	79	86	84	89	92	92	94	92	90	93
BARNEGAT LIGHT/LONG BEACH	OCEAN	28	29	32	30	26	30	47	47	57	60	73	78	73	69	75
SEAFORD	YORK	.	.	.	95	94	98	99	100	100	100	100	100	99	99	100
HAMPTON	HAMPTON (CITY)	71	66	63	47	55	61	73	75	82	83	76	74	74	78	84
FAIRHAVEN	BRISTOL	.	.	.	.	.	0	0	0	0	0	0	65	90	90	87
POINT PLEASANT	OCEAN	2	5	10	13	10	10	21	17	18	18	19	39	34	38	40
STONINGTON	NEW LONDON	.	.	24	39	38	35	36	52	67	77	82	71	66	78	68
WILDWOOD	CAPE MAY	0	0	0	0	0	0	3	21	32	32	51	82	75	90	96
OCEAN CITY	WORCESTER	0	0	1	0	0	0	2	1	1	3	0	42	45	26	35
POINT LOOKOUT	NASSAU	.	.	.	.	.	.	.	0	0	0	3	4	0	58	80
AVALON	CAPE MAY	.	.	.	.	.	.	.	.	.	.	0	99	99	98	98
NEW LONDON	NEW LONDON	.	.	0	0	0	21	32	24	21	22	21	29	34	39	73
CHATHAM	BARNSTABLE	0	0	0	0	0	0	1	5	1	4	18	19	19	14	11
ATLANTIC CITY	ATLANTIC	0	0	0	0	0	0	0	0	0	0	2	12	8	10	8
OTHER CONNECTICUT	NOT-SPECIFIED	1	4	0	0	0	0	0	0	0	0	0	0	0	24	46
POINT JUDITH	WASHINGTON	0	0	0	0	0	0	2	2	0	1	2	12	16	8	4
MONTAUK	SUFFOLK	0	0	0	0	0	0	0	0	0	0	3	9	11	12	9
ENGELHARD	HYDE	.	.	0	0	0	0	0	2	0	5	1	5	8	10	12
NEWPORT	NEWPORT	0	2	1	10	7	5	8	0	0	0	16	59	64	49	12
HAMPTON BAYS	SUFFOLK	0	0	0	0	0	1	4	5	1	2	8	23	12	7	12
BELFORD	MONMOUTH	0	0	0	1	0	0	0	0	0	0	0	1	2	1	17
OTHER ATLANTIC	ATLANTIC	12	0	0	0	0	0	0	0	0	0	0	6	35	38	27
CHINCOTEAGUE	ACCOMACK	0	0	0	0	0	0	10	33	39	47	54	78	75	27	14
NEW HAVEN	NEW HAVEN	.	.	0	0	0	0	0	0	0	0	0	0	0	0	85
GLOUCESTER	ESSEX	0	0	1	1	0	1	2	4	2	1	2	2	2	1	1
SANDWICH	BARNSTABLE	1	1	8	3	9	6	3	4	4	4	2	4	9	20	11
PROVINCETOWN	BARNSTABLE	2	1	4	4	4	2	3	38	13	19	18	35	28	17	10
OTHER CAPE MAY	CAPE MAY	0	0	0	0	0	0	0	0	1	0	0	1	35	8	22
INDIAN RIVER	SUSSEX	.	.	0	0	0	0	0	0	0	0	0	11	23	0	47
WELLFLEET	BARNSTABLE	.	0	16	23	35	31	7	34	11	25	7	9	2	4	7
OTHER MONMOUTH	MONMOUTH	0	0	0	0	0	0	0	0	0	0	0	1	2	46	4
HYANNISPORT	BARNSTABLE	.	.	.	.	.	.	.	.	.	.	9	19	20	10	9
ADDISON	WASHINGTON	.	.	.	.	.	0	0	0	0	0	0	0	1	5	4
NANTUCKET	NANTUCKET	8	1	3	1	1	0	15	0	0	0	9	19	12	9	9
HARWICH PORT	BARNSTABLE	0	0	0	0	0	0	0	9	2	14	19	25	6	14	10

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WANCHESE	DARE	.	.	0	1	0	0	0	13	11	3	3	1	1	0	1
SHINNECOCK HILLS	SUFFOLK	0	0	0	0	0	0	0	0	0	0	4	45	31	6	15
BUCKS HARBOR	WASHINGTON	0	0	0	0	0	0	0	0	0	1	0	0	42	0	3
BARNSTABLE	BARNSTABLE	.	.	0	0	0	0	0	0	0	0	2	11	29	19	5
FALMOUTH	BARNSTABLE	0	0	0	0	0	0	0	0	17	9	0	7	3	14	6

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Table 76 - Landed Value of scallops, linked to Vessel Homeport, ranked by fishing year 2008.

Table only includes ports with either more than 1M in 2008 landed value, or more than 250K in landed value with at least 10% port total scallops. X = confidential, less than 1M; XX = confidential, more than 1M. Data run, August 9, 2009.

Port	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
NEW BEDFORD	28300	32429	39317	31568	25804	44363	59779	65845	79089	88962	126049	159634	145917	156801	145392
CAPE MAY	6979	7453	7528	7957	5876	10546	16725	17891	23178	30267	46347	63443	59236	72497	62532
NEWPORT NEWS	1840	2250	2547	3263	3495	9017	12438	14089	16328	16788	22516	24306	20803	21774	18929
BARNEGAT LIGHT	3041	3370	3297	2821	2335	4406	6676	6978	7811	9853	15276	19351	15873	16626	16503
NORFOLK	14803	15818	16234	14093	10970	14765	18015	14287	16563	17464	20074	13893	11111	12474	11390
NEW BERN	X	X	X	X	837	2322	2650	3292	4235	6431	7885	7747	8314	12106	10785
WANCHESE	46	14	3	1	485	1	816	2769	3378	4401	5707	6652	4990	7053	6559
NEW LONDON	0	0	0	0	0	0	X	0	0	X	X	2296	4389	3131	5799
FAIRHAVEN	2708	3245	4453	4318	3720	6776	11794	6628	7133	7214	9021	10669	8406	7503	5415
POINT PLEASANT	953	977	1179	1504	1016	1386	2232	2374	2588	2938	3896	6835	6441	5532	5043
LOWLAND	6	120	445	0	X	963	1466	1786	2176	2897	3834	6114	4439	4579	4692
SEAFORD	X	X	X	0	0	0	0	X	2399	3452	3874	4551	2693	5540	4603
STONINGTON	0	1	0	536	73	0	X	698	1471	852	1270	3	59	464	4337
HAMPTON	4113	4413	4001	3014	2602	3704	4998	4103	4318	3742	6815	3576	5424	5213	4030
ATLANTIC CITY	X	X	X	X	X	0	X	X	0	2	96	3657	3484	3945	3154
ORIENTAL	X	X	174	X	890	1627	1776	1260	2059	3688	4397	7161	4572	4333	3151
POINT PLEASANT BEACH	X	0	0	0	0	X	X	X	X	X	456	1147	720	1589	2725
CAPE CANAVERAL	X	X	X	X	X	X	X	X	XX	1673	2380	3651	2574	2260	2441
MONTAUK	X	0	X	1	0	3	65	19	6	X	116	1206	386	2535	2386
BEAUFORT	42	X	X	X	0	X	X	244	256	67	289	1953	855	1473	2240
BARNSTABLE	2227	1968	1368	650	396	384	891	939	970	798	1152	2017	2649	2476	2164
CARROLLTON	X	X	X	X	X	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
WILDWOOD	4	5	149	X	X	X	805	1001	843	792	1855	2464	1559	1952	1776
GLOUCESTER	171	11	317	372	251	986	636	597	757	846	1681	2262	1654	1387	1449
BAYBORO	X	X	X	X	X	X	X	671	998	1512	2141	809	1235	1643	XX
BEDFORD	X	X	X	X	X	X	X	XX	X	XX	XX	XX	XX	XX	XX
BOSTON	265	334	454	454	162	449	512	706	880	1021	639	XX	1037	719	XX
CHATHAM	0	0	0	0	0	X	0	296	42	273	478	1285	1557	1723	1120
MANAHAWKIN	0	0	0	0	0	0	0	0	0	0	0	XX	XX	XX	XX
SOUTHWEST HARBOR	168	405	521	482	282	763	1086	590	529	674	X	XX	XX	XX	XX
TREMONT	X	X	X	338	226	X	X	X	554	787	1051	XX	XX	XX	X
AURORA	X	X	X	X	X	X	X	X	X	XX	XX	XX	XX	XX	X
SUFFOLK	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X
PLYMOUTH	X	X	X	66	12	X	X	X	126	X	253	1568	845	1678	960
NEWPORT	X	X	X	X	X	X	X	X	X	X	X	X	891	X	X
OCEAN CITY	0	0	0	0	0	0	0	0	X	0	X	X	X	X	X
KEY WEST	X	0	0	X	0	0	0	0	X	X	X	X	X	X	X
JACKSONVILLE	X	0	0	X	X	X	X	X	X	0	X	1414	XX	X	X
TILGHMAN ISLAND	0	0	0	0	0	0	0	0	0	0	0	590	859	483	800
OWLS HEAD	X	235	87	X	X	X	X	516	395	371	347	682	487	239	745
OCEAN CITY	X	11	1	X	0	X	7	23	27	14	583	1906	1887	737	725
HAMPTON BAYS	3	4	19	7	5	7	320	307	42	80	398	1235	763	379	509
WESTPORT	0	0	0	0	0	0	0	0	0	0	30	420	491	555	421
SWAN QUARTER	0	0	X	X	X	X	827	X	X	749	1509	2775	941	444	404
PROVINCETOWN	15	27	72	86	36	72	96	1867	352	351	391	1495	932	811	381
TOMS RIVER	0	0	0	0	0	0	0	X	X	X	X	0	X	X	X
NANTICOKE	0	0	0	0	0	0	0	0	0	0	0	X	X	X	X
POINT LOOKOUT	0	0	X	X	0	X	0	0	0	0	19	X	X	X	X
GLOUCESTER POINT	0	0	0	0	0	0	0	0	0	0	0	0	X	X	X
GALLOWAY	0	0	0	0	0	0	0	0	0	0	0	0	0	X	X

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SCRANTON		0	0	0	0	0	0	0	0	0	X	X	X	X	X	X		
BELMAR	X		0	0	0	0	0	0	0	0	0	0	187	250	X	X		
HULL		0	0	0	0	0	0	X	X	X	X	X	X	X	X	X		
NEW YORK		0	0	0	X		0	X	X	X	X	X		0	X		0	X

The largest numbers of permitted limited access scallop vessels currently are in the ports of New Bedford, MA and Cape May, NJ, which represent 37% and 19% of the total, respectively (Table 77). Of the 348 permitted limited access vessels in 2009, 203 originate from New Bedford, MA and Cape May, NJ. Although the number of permitted limited access vessels has only increased from 308 in 1994 to a peak of 380 in 2005 and New Bedford has always had the largest number of permitted limited access vessels, the port with the next greatest number of contributors shifted from Norfolk, VA (18% in 1994 to 3% in 2009) to Cape May, NJ (9% in 1994 to 19% in 2009).

In addition to having the greatest number of permitted limited access scallop vessels, New Bedford, MA also has the greatest number of general category scallop vessels. Cape May, NJ, Barnegat Light, NJ, and Gloucester, MA also have high numbers of general category scallop vessels. Generally, ports that had a higher number of general category scallop vessels from 1994-2004, such as New Bedford, Gloucester, and Chatham, have seen a significant decrease in these vessels in recent years. Increases have been seen in ports that originally had no to very few permitted general category scallop vessels, such as Belhaven and Engelhard, NC (Table 77). Although the largest increases have been from many ports in NC, they have increased from 1 or no permitted general category scallop vessels to only about 6 or 7, which results in a 600-700% increase. Regardless of this increase, these ports only had a landed value for scallops of \$311,000 or less. Other ports that saw an increase of 300% in general category vessels, such as Chincoteague, VA and Barnegat Light, NJ, had a landed value of \$7.3 million and \$16.9 million, respectively (Table 74). Although some ports, such as New Bedford and Gloucester have experienced a decline in the number of general category scallop vessels, the simultaneous increase in permitted limited access boats has aided to increase the landed value of scallops in those ports to \$202.5 million and \$812,000, respectively. As Table 79 shows, however, the general category fleet is not homogeneous, but varies over space and time, with some ports showing a general category fleet that mirrors limited access vessels in size (for example Atlantic City NJ), and others showing the more traditionally smaller-scale vessels (such as Fairhaven MA). Thus impacts to the general category fishery as a whole can be experienced differently in different ports.

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Table 77 - Permitted limited access scallop vessels, by homeport, 1994-2009.

Homeport	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
New Bedford, MA (Bristol county)	94	91	79	75	73	78	81	96	105	110	115	130	136	136	137	136
Cape May, NJ (Cape May county)	33	31	31	33	33	34	38	39	45	53	58	72	71	75	70	67
Newport News, VA (Newport News City)	8	9	10	10	12	17	19	21	21	21	22	23	19	19	18	18
Barnegat Light, NJ (Ocean county)	9	9	9	9	8	8	10	10	9	11	13	12	11	11	11	11
New Bern, NC (Craven county)	1	2	2	4	4	6	6	8	8	8	8	13	13	14	11	11
Norfolk, VA (Norfolk City)	65	67	63	58	51	42	35	27	27	27	22	13	12	11	11	11
Wanchese, NC (Dare county)	4	3	2	2	2	1	4	8	7	7	6	6	8	8	8	8
Lowland, NC (Pamlico county)	6	6	7	6	6	8	7	7	7	8	9	8	8	8	7	7
Hampton, VA (Hampton City)	15	15	11	11	8	7	6	6	6	6	7	5	7	7	7	6
Seaford, VA (York county)	1	1	1	0	0	0	0	2	3	4	4	5	6	5	5	6
Beaufort, NC (Carteret county)	6	6	3	2	1	1	1	1	1	0	0	0	0	1	2	5
Fairhaven, MA (Bristol county)	12	13	10	10	13	12	15	11	9	9	8	9	8	6	5	5
New London, CT (New London county)	0	0	0	0	0	1	1	1	1	1	1	3	5	5	5	5
Point Pleasant, NJ (Ocean county)	6	6	5	5	4	4	4	4	4	4	4	4	4	4	6	5
Oriental, NC (Pamlico county)	2	2	3	2	4	5	4	5	5	7	9	9	14	11	7	4
Stonington, CT (New London county)	3	3	5	6	6	4	5	7	7	8	8	4	4	5	4	4
Atlantic City, NJ (Atlantic county)	0	0	0	0	0	0	0	0	0	0	0	1	2	2	3	3
Montauk, NY (Suffolk county)	1	0	0	0	0	0	0	0	0	0	0	1	0	2	3	3
Narragansett, RI (South county)	2	2	3	3	3	4	4	3	3	3	2	3	4	4	3	3
Barnstable, MA (Barnstable county)	12	9	9	4	2	1	1	1	1	1	2	2	2	2	2	2
Bayboro, NC (Pamlico county)	1	1	1	3	1	2	2	2	4	3	3	2	3	2	2	2
Cape Canaveral, FL (Brevard county)	3	4	4	3	3	1	2	3	2	2	2	2	2	2	2	2
Carrollton, VA (Isle Of Wight county)	2	3	2	1	2	2	3	2	2	2	2	2	2	2	2	2
Owls Head, ME (Knox county)	2	3	2	2	2	2	3	3	3	2	2	2	2	2	2	2
Plymouth, MA (Plymouth county)	2	0	0	0	0	0	0	0	0	0	1	2	3	3	2	2
Swan Quarter, NC (Hyde county)	1	1	1	1	1	2	2	2	3	3	3	3	1	1	2	2
Wildwood, NJ (Cape May county)	5	5	4	3	3	2	2	2	2	2	2	2	4	2	2	2
Bedford, MA (Middlesex county)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boston, MA (Suffolk county)	1	1	2	3	3	2	2	2	2	2	1	1	1	1	1	1
Essex, CT (Middlesex county)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Jacksonville, FL (Duval county)	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1
Key West, FL (Monroe county)	0	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1
Manahawkin, NJ (Ocean county)	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
Newport, NC (Carteret county)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ocean City, MD (Worcester county)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Point Pleasant Beach, NJ (Ocean county)	0	0	0	0	0	1	1	1	1	1	1	1	2	1	2	1
Poquoson, VA (York county)	0	0	0	0	0	2	2	1	1	2	2	2	2	2	1	1
Southwest Harbor, ME (Hancock county)	6	3	4	3	2	2	2	2	2	2	1	1	1	1	1	1
Suffolk, VA (Suffolk (City) county)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Tremont, ME (Hancock county)	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
Westport, MA (Bristol county)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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Table 78 - Permitted general category scallop vessels, by homeport, 2005-2009. All ports that had at least 1 GC permit in 2009 are included.

Port	County	State	2005	2006	2007	2008	2009
NEW BEDFORD	PLYMOUTH	MA	86	88	83	67	72
CAPE MAY	SUFFOLK	MA	30	48	54	25	28
BARNEGAT LIGHT	HANCOCK	ME	29	30	31	28	27
GLOUCESTER	HANCOCK	ME	38	49	55	23	26
POINT PLEASANT	WASHINGTON	ME	17	22	24	14	15
PROVINCETOWN	PLYMOUTH	MA	14	16	15	11	11
HAMPTON BAYS	BARNSTABLE	MA	13	21	21	7	10
NEW BERN	PLYMOUTH	MA	5	6	5	5	10
NARRAGANSETT	DARE	NC	37	44	50	5	8
CHATHAM	OCEAN	NJ	23	27	29	7	7
STONINGTON	BRISTOL	MA	16	19	15	5	7
BELHAVEN	SAGADAHOC	ME	12	9	8	5	6
SEABROOK	CARTERET	NC	2	4	9	4	6
SOUTH BRISTOL	WICOMICO	MD	6	8	7	6	6
BEAUFORT	BEAUFORT	NC	14	14	14	4	5
ENGELHARD	CRAVEN	NC	7	8	7	5	5
LOWLAND	GLOUCESTER	VA	5	5	5	2	5
OCEAN CITY	SUSSEX	DE	12	17	15	4	5
PORTLAND	CARTERET	NC	24	22	19	6	5
RYE	DUVAL	FL	3	6	8	3	5
BOSTON	MONMOUTH	NJ	13	11	13	3	4
HAMPTON	SUFFOLK	NY	7	7	6	4	4
MONTAUK	ROCKINGHAM	NH	17	17	20	5	4
NEWBURYPORT	NEWPORT	RI	6	7	5	4	4
POINT PLEASANT BEACH	WASHINGTON	ME	3	3	2	5	4
PORT CLYDE-TENANTS HARBOR	DARE	NC	2	2	6	4	4
PORTSMOUTH	CARTERET	NC	12	12	12	6	4
ROCKPORT	CUMBERLAND	NJ	3	5	5	4	4
SCITUATE	SUFFOLK	NY	8	7	8	4	4
NEW YORK	DUVAL	FL	2	3	3	2	3
NORFOLK	YORK	ME	7	7	5	3	3
TILGHMAN ISLAND	NEW LONDON	CT	7	10	9	3	3
WANCHESE	NEWPORT	RI	14	13	10	4	3
WILDWOOD	CAPE MAY	NJ	5	5	6	4	3
WOODS HOLE	NASSAU	NY	3	4	5	5	3
ATLANTIC CITY	ATLANTIC	NJ	20	22	17	2	2
FRIENDSHIP	WASHINGTON	ME	2	3	3	3	2
KENNEBUNKPORT	ATLANTIC	NJ	0	0	0	2	2
MARSHFIELD	HAMPTON (CITY)	VA	2	3	3	2	2
MILLVILLE	SUFFOLK	NY	1	3	4	2	2
MOUNT DESERT	CUMBERLAND	ME	1	1	1	3	2
NEW LONDON	SUFFOLK	NY	6	8	6	2	2
NEWPORT NEWS	YORK	ME	6	5	6	2	2
SACO	WASHINGTON	ME	0	1	2	2	2
SALISBURY	SUSSEX	NJ	1	2	3	2	2
SHALLOTTE	CHARLESTON	SC	2	2	2	2	2
STEUBEN	MONMOUTH	NJ	2	3	3	2	2
SWAN QUARTER	CRAVEN	NC	5	9	7	2	2
WELLFLEET	NEWPORT NEWS (CIT	VA	5	4	5	2	2

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Port	County	State	2005	2006	2007	2008	2009
WILMINGTON	CAPE MAY	NJ	6	6	5	2	2
YORK HARBOR	NEW CASTLE	DE	0	1	1	2	2
BARNSTABLE	OCEAN	NJ	9	9	9	1	1
BATH	OCEAN	NJ	2	3	3	1	1
BELMAR	PAMLICO	NC	2	2	1	1	1
BREMEN	BEAUFORT	NC	2	4	3	1	1
CAPE CANAVERAL	SUFFOLK	MA	7	6	5	2	1
CAPE MAY COURT HOUSE	BARNSTABLE	MA	1	1	1	1	1
CHEBEAGUE ISLAND	FAIRFIELD	CT	0	2	0	1	1
CUSHING	CAPE MAY	NJ	2	2	2	1	1
CUTLER	CAPE MAY	NJ	2	3	5	2	1
EAST CENTRAL WASHINGTON	CUMBERLAND	ME	1	1	1	1	1
EASTPORT	MOBILE	AL	0	2	2	1	1
FAIRHAVEN	KNOX	ME	6	6	4	2	1
GLOUCESTER COURTHOUSE	HANCOCK	ME	0	0	0	1	1
GREEN HARBOR-CEDAR CREST	WICOMICO	MD	0	2	4	1	1
HAMPTON FALLS	WASHINGTON	ME	1	1	1	1	1
HARPSWELL	DUKES	MA	8	14	16	1	1
HARWICH PORT	HYDE	NC	5	8	6	0	1
HULL	BRISTOL	MA	1	1	1	1	1
KITTERY	SAGADAHOC	ME	5	6	6	1	1
LEWES	CARTERET	NC	3	3	3	1	1
LUBEC	PAMLICO	NC	9	7	4	2	1
LYNN	PLYMOUTH	MA	0	0	0	1	1
MACHIASPORT	SUFFOLK	NY	6	6	7	3	1
MANAHAWKIN	SUFFOLK	NY	0	0	0	1	1
MARSHALLBERG	ROCKINGHAM	NH	1	1	2	1	1
MONTVILLE	HANCOCK	ME	0	0	0	1	1
MOREHEAD CITY	CUMBERLAND	ME	1	1	1	1	1
NANTICOKE	BARNSTABLE	MA	1	2	2	1	1
NASSAWADOX	MONMOUTH	NJ	1	2	1	1	1
NEPTUNE	PAMLICO	NC	1	1	1	1	1
NEWPORT	WASHINGTON	ME	12	13	12	1	1
OCEAN BLUFF-BRANT ROCK	SUSSEX	DE	2	1	2	1	1
ORIENTAL	CUMBERLAND	ME	5	13	8	1	1
OWLS HEAD	PAMLICO	NC	3	6	5	3	1
PHIPPSBURG	WASHINGTON	ME	0	1	1	1	1
PLYMOUTH	HILLSBOROUGH	FL	8	9	12	1	1
POINT LOOKOUT	ESSEX	MA	1	2	2	1	1
PORT NORRIS	PLYMOUTH	MA	7	7	7	2	1
RICHLANDS	SUFFOLK	NY	0	0	0	0	1
ROCKLAND	CUMBERLAND	NJ	4	7	3	1	1
SCRANTON	NEW LONDON	CT	1	1	1	2	1
SOUTH THOMASTON	WASHINGTON	RI	0	1	0	1	1
SOUTHAMPTON	WASHINGTON	RI	1	1	1	1	1
SOUTHPORT	NORTHAMPTON	VA	0	0	0	1	1
SPRUCE HEAD	MONMOUTH	NJ	0	0	0	0	1
SWAMPSCOTT	BRISTOL	MA	2	1	1	1	1
TANGIER	NEW LONDON	CT	1	1	1	1	1
TOMS RIVER	NEW YORK	NY	0	1	1	1	1
TOWNSEND	NEW YORK	NY	2	2	3	2	1

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Port	County	State	2005	2006	2007	2008	2009
TREMONT	ESSEX	MA	1	0	1	1	1
WAKEFIELD-PEACEDALE	NEW CASTLE	DE	3	3	3	1	1
WEST SAYVILLE	SUFFOLK	NY	0	0	0	0	1
WESTPORT	PLYMOUTH	MA	7	7	7	1	1
WINTER HARBOR	WORCESTER	MD	3	5	6	2	1

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Table 79 - Average GRT (gross registered tons), average length, and number of permitted scallop vessels by top 20 homeports, 1994-2008.

			1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Atlantic, NC	Limited access	Avg. Length	78	81	81	81	81	81	81	81	81	81	81	81	81	.	.
		Avg. GRT	168	168	168	168	168	168	168	168	168	168	168	168	168	.	.
		No. permits	3	3	3	3	3	3	3	3	3	3	3	3	3	0	0
	General Category	Avg. Length	73	70	70	68	68	68	63	63	63	63	63	54	63	.	.
		Avg. GRT	108	108	108	100	100	100	75	75	75	75	75	48	75	.	.
		No. permits	3	3	3	4	4	4	1	1	1	1	1	2	1	0	0
Atlantic City, NJ	Limited access	Avg. Length	.	.	.	.	.	.	.	.	.	.	.	75	75	75	75
		Avg. GRT	.	.	.	.	.	.	.	.	.	.	.	125	121	123	123
		No. permits	.	.	.	.	.	.	.	.	.	.	.	1	2	3	3
	General Category	Avg. Length	59	56	54	64	62	60	61	78	83	81	77	81	83	59	59
		Avg. GRT	73	62	62	99	90	84	90	124	145	139	121	119	128	68	68
		No. permits	5	6	5	7	9	12	11	18	23	22	26	35	37	2	2
Aurora, NC	Limited access	Avg. Length	75	75	75	75	75	83	68	73	73	56	73	73	73	68	.
		Avg. GRT	116	116	116	116	116	133	114	125	125	85	125	125	125	114	.
		No. permits	2	2	2	2	2	1	1	2	2	3	2	2	2	1	0
	General Category	Avg. Length	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		Avg. GRT	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
		No. permits	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Barnegat Light, NJ	Limited access	Avg. Length	69	69	69	69	69	69	65	65	69	68	68	67	67	67	67
		Avg. GRT	117	117	117	117	110	110	97	97	108	107	107	102	101	101	101
		No. permits	9	9	9	9	8	8	10	10	9	11	13	12	11	11	11
	General Category	Avg. Length	63	59	50	58	60	52	51	52	52	53	52	49	50	55	56
		Avg. GRT	91	79	44	63	73	53	48	56	54	54	50	38	40	57	58
		No. permits	9	14	10	12	11	27	35	48	51	59	63	63	62	28	27
Barnstable, MA	Limited access	Avg. Length	79	82	81	68	70	70	78	78	78	78	70	70	70	70	70
		Avg. GRT	128	141	133	80	96	90	89	89	89	89	76	76	76	76	76
		No. permits	11	9	9	4	2	1	1	1	1	1	2	2	2	2	2
	General Category	Avg. Length	45	42	41	39	40	43	40	40	41	42	42	39	40	42	42
		Avg. GRT	42	36	33	29	27	31	26	25	25	26	27	21	23	27	27
		No. permits	21	25	23	20	22	22	23	29	29	23	22	19	16	1	1
Cape Canaveral, FL	Limited access	Avg. Length	73	72	72	73	73	81	83	79	76	76	76	76	76	76	76
		Avg. GRT	136	132	132	136	136	175	160	142	140	140	140	140	140	140	140
		No. permits	3	4	4	3	3	1	2	3	2	2	2	2	2	2	2
	General Category	Avg. Length	81	.	.	.	.	.	.	.	.	74	67	69	65	74	68
		Avg. GRT	175	.	.	.	.	.	.	.	.	108	93	98	92	108	111
		No. permits	1	.	.	.	.	.	.	.	.	2	8	10	9	2	1
Cape May, NJ	Limited access	Avg. Length	82	82	83	82	81	80	80	80	78	74	74	74	75	77	77
		Avg. GRT	151	152	155	149	148	146	145	146	143	132	130	128	131	135	133
		No. permits	33	31	31	33	33	34	38	39	45	53	58	72	71	70	67
	General Category	Avg. Length	77	78	78	67	72	67	63	60	61	54	56	52	55	68	73
		Avg. GRT	126	130	137	109	122	104	92	88	81	65	63	56	62	93	118
		No. permits	30	28	28	29	26	36	42	43	42	48	63	73	82	25	28

AFFECTED ENVIRONMENT
Human Communities/Social-Economic Environment

			1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Fairhaven, MA	Limited access	Avg. Length	86	87	88	89	89	91	89	89	87	87	90	89	89	98	98
		Avg. GRT	158	158	160	166	164	171	172	166	158	158	168	162	161	185	185
		No. permits	12	13	10	10	13	12	15	11	9	9	8	9	8	5	5
	General Category	Avg. Length	43	42	45	43	42	43	46	45	45	46	46	46	45	80	94
		Avg. GRT	31	29	36	31	29	31	38	42	40	41	39	34	32	155	192
		No. permits	22	19	21	27	28	22	22	23	26	30	27	26	27	2	1
Hampton, VA	Limited access	Avg. Length	78	78	77	77	77	76	77	77	77	76	76	75	75	62	73
		Avg. GRT	152	152	152	152	154	152	162	162	162	160	158	140	124	89	112
		No. permits	15	15	11	11	8	7	6	6	6	6	7	5	7	7	6
	General Category	Avg. Length	67	.	.	42	62	62	39	46	39	62	.	73	73	45	45
		Avg. GRT	97	.	.	17	61	61	25	44	25	61	.	114	116	25	25
		No. permits	1	.	.	1	1	1	3	4	3	1	.	3	4	1	1
Lowland, NC	Limited access	Avg. Length	73	73	73	73	73	74	73	73	73	72	75	77	78	81	81
		Avg. GRT	92	92	97	92	92	107	106	106	106	102	103	112	114	118	118
		No. permits	6	6	7	6	6	8	7	7	7	8	9	8	8	7	7
	General Category	Avg. Length	68	66	66	66	66	66	66	66	66	62	73	70	69	78	82
		Avg. GRT	75	73	73	73	73	73	73	73	73	73	103	99	92	95	105
		No. permits	7	2	2	2	2	2	2	2	2	2	5	7	7	2	5
New Bedford, MA	Limited access	Avg. Length	87	88	87	87	87	87	86	85	84	84	85	82	82	84	84
		Avg. GRT	172	173	174	174	176	175	173	169	164	163	164	153	154	158	160
		No. permits	94	91	79	75	73	78	81	96	105	110	115	130	136	137	136
	General Category	Avg. Length	66	66	67	69	68	68	66	66	66	65	64	61	61	78	75
		Avg. GRT	101	102	103	110	109	107	103	101	103	102	98	94	96	140	133
		No. permits	160	156	146	146	118	113	117	123	123	124	128	130	128	67	72
New Bern, NC	Limited access	Avg. Length	84	73	71	73	73	75	77	75	77	79	79	83	76	81	81
		Avg. GRT	198	89	89	94	94	103	115	106	114	113	113	122	114	122	121
		No. permits	1	2	2	4	4	6	6	8	8	8	8	13	13	11	11
	General Category	Avg. Length	75	.	75	.	67	.	.	67	.	.	43	69	60	79	70
		Avg. GRT	81	.	81	.	79	.	.	97	.	.	18	98	80	113	90
		No. permits	1	.	1	.	1	.	.	1	.	.	1	5	6	5	10
New London, CT	Limited access	Avg. Length	.	.	.	.	.	86	86	86	86	86	86	83	81	81	81
		Avg. GRT	.	.	.	.	.	147	147	147	147	147	147	188	168	168	168
		No. permits	.	.	.	.	.	1	1	1	1	1	1	3	5	5	5
	General Category	Avg. Length	73	73	61	53	49	50	51	54	52	56	53	54	54	50	50
		Avg. GRT	125	125	85	65	55	55	59	63	52	57	49	52	52	30	30
		No. permits	3	3	5	7	9	9	8	11	10	8	11	10	10	2	2
Newport News, VA	Limited access	Avg. Length	76	78	79	79	79	79	79	78	78	78	79	79	77	78	78
		Avg. GRT	131	138	143	148	149	149	148	146	146	145	142	143	140	141	141
		No. permits	8	9	10	10	12	17	19	21	21	21	22	23	19	18	18
	General Category	Avg. Length	.	.	52	50	69	64	64	.	63	63	52	56	67	55	55
		Avg. GRT	.	.	42	42	92	88	88	.	86	86	52	74	101	51	51
		No. permits	.	.	1	1	4	1	1	.	1	1	2	8	5	2	2

AFFECTED ENVIRONMENT
Human Communities/Social-Economic Environment

			1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Norfolk, VA	Limited access	Avg. Length	77	79	79	78	79	79	78	79	80	80	81	79	80	80	80
		Avg. GRT	137	138	138	138	136	133	132	133	135	137	140	139	139	141	141
		No. permits	65	67	63	58	51	42	35	27	27	27	22	13	12	11	11
	General Category	Avg. Length	66	63	66	69	70	63	59	60	60	57	55	52	51	81	81
		Avg. GRT	85	75	84	92	92	77	76	74	72	62	57	48	46	129	129
		No. permits	41	35	26	30	21	20	14	18	20	18	17	16	14	3	3
	Limited access	Avg. Length	71	71	70	73	76	75	76	75	66	68	79	80	67	72	79
		Avg. GRT	101	101	108	121	127	126	127	123	100	99	115	118	94	102	123
		No. permits	2	2	3	2	4	5	4	5	5	7	9	9	14	7	4
Oriental, NC	General Category	Avg. Length	.	.	.	.	70	69	69	70	65	65	68	68	59	40	40
		Avg. GRT	.	.	.	.	109	105	105	109	88	88	92	88	74	23	23
		No. permits	.	.	.	.	2	3	3	2	4	4	10	9	15	1	1
	Limited access	Avg. Length	85	85	76	76	76	80	80	76	76	76	82	81	79	78	78
		Avg. GRT	175	175	149	149	149	161	161	149	149	149	166	164	157	151	151
		No. permits	1	1	3	3	3	4	4	3	3	3	2	3	4	3	3
	General Category	Avg. Length	59	58	60	58	59	57	57	56	57	56	56	56	55	46	62
		Avg. GRT	73	74	78	73	74	71	70	67	70	70	67	68	67	31	91
		No. permits	71	76	72	82	78	81	76	79	80	84	87	90	93	5	8
Point Pleasant, NJ	Limited access	Avg. Length	75	75	79	79	83	83	83	82	82	82	82	82	82	71	76
		Avg. GRT	108	108	120	120	131	131	131	122	122	122	122	122	122	94	106
		No. permits	6	6	5	5	4	4	4	4	4	4	4	4	4	6	5
	General Category	Avg. Length	49	52	52	55	53	50	48	49	48	51	53	56	56	64	66
		Avg. GRT	48	53	53	60	59	47	43	45	44	48	51	56	56	78	79
		No. permits	24	20	20	21	25	27	29	33	34	31	35	37	41	14	15
	Limited access	Avg. Length	86	86	82	.	.	.	.	83	87	84	84	86	87	87	87
		Avg. GRT	125	125	181	.	.	.	.	141	154	147	147	143	142	145	148
		No. permits	1	1	1	.	.	.	.	2	3	4	4	5	6	5	6
Seaford, VA	General Category	Avg. Length	42	42	.	.	.	.	.	88	.	.	.	50	50	.	.
		Avg. GRT	6	6	.	.	.	.	.	135	.	.	.	48	48	.	.
		No. permits	1	1	.	.	.	.	.	1	.	.	.	1	1	.	.
	Limited access	Avg. Length	102	108	123	123	85	80	78	79	78	80	81	81	81	81	81
		Avg. GRT	150	148	143	143	164	129	136	143	145	151	152	152	151	151	151
		No. permits	4	3	2	2	2	1	4	8	7	7	6	6	8	8	8
	General Category	Avg. Length	76	76	75	70	74	68	65	63	59	57	54	54	54	66	73
		Avg. GRT	122	122	129	107	122	99	91	87	75	67	63	63	63	92	115
		No. permits	10	11	9	12	10	14	14	15	18	22	26	32	30	4	3

7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS

7.1 Biological Impacts

Biological impacts discussed below focus on expected changes in fishing mortality. Impacts on habitat and endangered or threatened species are discussed in separate sections. Impacts of the Proposed Action are discussed in relation to impacts on regulated groundfish, other species, and bycatch (as defined by the M-S Act).

7.1.1 Biological Impacts of the Proposed Action

7.1.1.1 ACL Specifications – Impacts on Groundfish Stocks

7.1.1.1.1 Option Two – Fishery Specifications and ACLs for FY 2010 – 2012

This option proposes to adopt specifications and ACLs for FY 2010 -2012. This measure includes not only the identification of ACLs as required by the M-S Act and as implemented by Amendment 16; it includes the allocation of yellowtail flounder between the groundfish and scallop fisheries as part of the ACL process. It also incorporates adoption of the incidental catch TACs for the special management programs that use Category B DAS, adopts the TACs for Eastern GB cod, Eastern GB haddock, and GB yellowtail flounder that are applicable to the U.S./Canada Resource Sharing Understanding, and specifies the TAC for the CAI Hook Gear Haddock SAP. The biological impacts of each of these elements will be discussed in this section.

As described in Section 3.1.1, this action defines the Overfishing Level (OFL), Acceptable Biological Catch (ABC), and Annual Catch Limits (ACLs) for the multispecies fishery. The OFLs are based on an estimate of stock size and F_{MSY} . The ABCs are reduced below the OFL and are based on a control rule for each stock. These control rules were identified in Amendment 16. In most cases, the ABC is based on a fishing mortality of either 75 percent of F_{MSY} or an Frebuild, whichever is lower. The ABC is thus below the OFL and if catches are kept at or below the ABC, overfishing is unlikely to occur. The ACL is set lower than the ABC to account for management uncertainty. The ABCs – and thus the ACLs - that are specified for FY 2010 through FY 2012 are based on the fishing mortality targets adopted by Amendment 16. These targets were designed to end overfishing and to rebuild groundfish stocks consistent with the requirements of the M-S Act and the Council's rebuilding goals. The ABCs were set by the Science and Statistical Committee (SSC). In all cases the ACL is lower than the ABC. The calculation of these values is described in detail in Appendices I through IV.

If the ACL is approached or exceeded, accountability measures (AMs) are triggered that are designed to either prevent or end overfishing. The exact AM that is used depends on the component of the fishery and the fishing year, as Amendment 16 adopted different AMs for different components and fishing years.

For stocks that have an age-based assessment and an age-based projection model, the impacts on stock size of setting the ABCs can be estimated using short-term projections. These project the estimated median stock size expected to result by limiting catches to the ABC. While these projections are based on the scientific advice of the GARM III and TRAC panels, the SSC, and the Groundfish Plan Development Team, projections are subject to uncertainty and future stock size may differ from the trajectories illustrated here. Since the ACL is lower than the ABC, these projections may under-estimate stock rebuilding. The ACL, however, is designed to increase the likelihood of achieving the ABC. These short-term projections differ slightly from those reported in Amendment 16 because they use more recent data that was not able for preparation of that document. As an overview, these projections used estimated catch for 2008 and assumed that 2009 fishing mortality is that estimated to result from management measures adopted by an interim action in FY 2009. The calculations are described in detail in Appendix III.

The projection results are shown in Figure 24 through Figure 36. Each figure includes the upper quartile, median, and lower quartile of the projected stock size, the most recent estimate of stock size, and the target stock size, or SSB_{MSY} . Note that for GB yellowtail flounder two figures are shown. This stock was assessed at the Transboundary Resources Assessment Committee (TRAC) in 2008. At that meeting, two assessment models were put forward. One model (labeled “including”) includes the Canadian survey results for 2008 and 2009; the second model (labeled “excluding”) does not. The “excluding” model gives lower estimates of stock size.

Projections for most stocks indicate increases in stock size during the three years FY 2010 through FY 2012. Two exceptions are the two haddock stocks. GB haddock stock size is expected to decline as the exceptional 2003 year class is subject to fishing and natural mortality, but should remain above SSB_{MSY} in the short term. GOM haddock stock size is also projected to decline to slightly less than SSB_{MSY} over the next three years. If the projections prove accurate, GOM cod, GB haddock, plaice, redfish, and perhaps GB yellowtail flounder (if the “including” assessment model proves accurate) will be above SSB_{MSY} during this three year period. GOM haddock, GB yellowtail flounder (under either assessment model), CC/GOM yellowtail flounder, SNE/MA yellowtail flounder, witch flounder, white hake, and GB winter flounder should increase to more than the minimum biomass threshold and will no longer be overfished. These latter stocks, however, are not expected to reach their target biomass. The projections indicate GB cod, SNE/MA winter flounder, and Atlantic halibut will remain overfished in FY 2012.

Similar estimates cannot be developed for GOM winter flounder, the two windowpane flounder stocks, ocean pout, pollock, and Atlantic wolffish as projections are considered unreliable for those stocks.

When compared to the No Action alternative, the projected stock size under the Proposed Action is identical. This is because the projections for both alternatives use the ABC as future catch. But with the Proposed Action, an ACL is set below the ABC. This means that the catch is more likely to be at or below the ABC in the Proposed Action and so the stock size trajectories are more likely to be realized. The primary difference between the Proposed Action and the No Action alternatives is that there is less risk that the ABCs will be exceeded under the Proposed Action.

The National Standard Guidelines for National Standard 1 (50 CFR 600.310) suggest that the ABC, when possible, should be based on the probability that an actual catch equal to the ABC would result in overfishing. Further, the NSGs indicate this probability cannot exceed 50 percent and should be lower. For the ABCs identified by this action, the probability that overfishing will

occur should catch equal ABC can only be determined for stocks with age-based assessments and projections. Because of the way ABC is defined, this probability will never exceed 50 percent: the ABC is set using a fishing mortality that is always at least 25 percent less than F_{MSY} . The specific probabilities were evaluated by running a short-term projection with catch set at the ABC and determining the probability that the point estimate of F_{MSY} (or its proxy) would be exceeded. It is acknowledged that this is only a partial analysis because, as noted by the SSC (see Appendix I), it is not possible to quantify all elements of scientific uncertainty when determining the ABC for groundfish stocks. This type of analysis could be improved if other elements are quantified in the future.

Results of the analysis are shown in Table 80. With the proposed ABCs, over the next three years the probability that overfishing will occur if catch equals ABC does not exceed 20 percent for any of the stock/year combinations. For several stocks the probability of overfishing if catch equals the ABC approaches zero. These values are the same for the No Action alternative, since it is assumed the same ABC will be adopted

Specifying the CAI Hook Gear Haddock SAP TAC is not expected to increase fishing mortality for GB haddock. The TAC is a subset of the overall ACL for GB haddock and as such it does not increase possible catches. Regulations implementing the SAP include sufficient monitoring requirements that the TAC is not likely to be exceeded. Recent catches in the SAP have not approached the proposed TACs. Framework 42 adopted a mechanism for adjusting the TAC for the CAI Hook Gear Haddock SAP based on the relative difference between exploitable biomass in 2004 and the projected exploitable biomass for a given year. With respect to the TAC for the CAI Hook Gear Haddock SAP, the Proposed Action and the No Action alternative are the same. This action does not consider changing the formula adopted by FW 42, but just presents the results of applying that formula to projected stock size. It is included here to facilitate preparation of the EA for all specifications for this fishery. There is no difference between the biological impacts of the Proposed Action and the No Action alternative since they are the same.

Adopting specifications for groundfish stocks is likely to have only limited impacts on non-groundfish species. Specifications are an administrative measure, and they are calculated in such a way to achieve the mortality targets adopted by Amendment 16. If catches exceed an ACL it can lead to triggering an AM. As discussed in Amendment 16, the management measures (including AMs) adopted to achieve the mortality targets may lead to effort shifts into some other fisheries. These specifications are not expected to result in any additional biological impacts on other stocks beyond those described in Amendment 16. No difference are expected between this Proposed Action and the No Action alternative.

Figure 24 – GB cod: short-term projection with catch at ABC

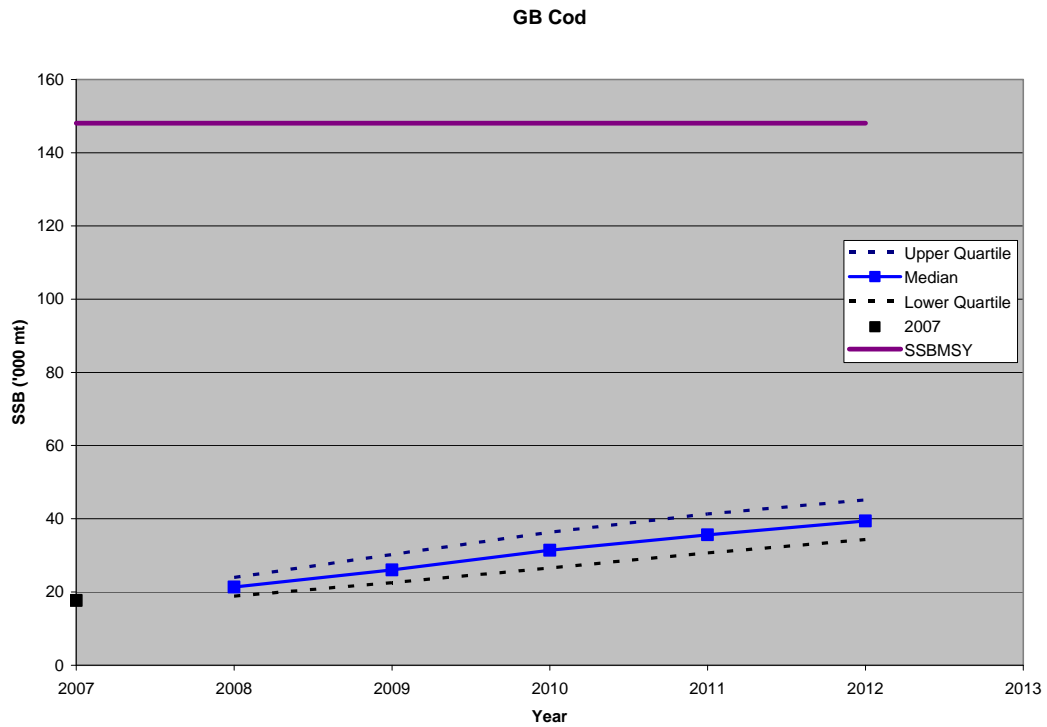


Figure 25 – GOM cod: short-term projection with catch at ABC

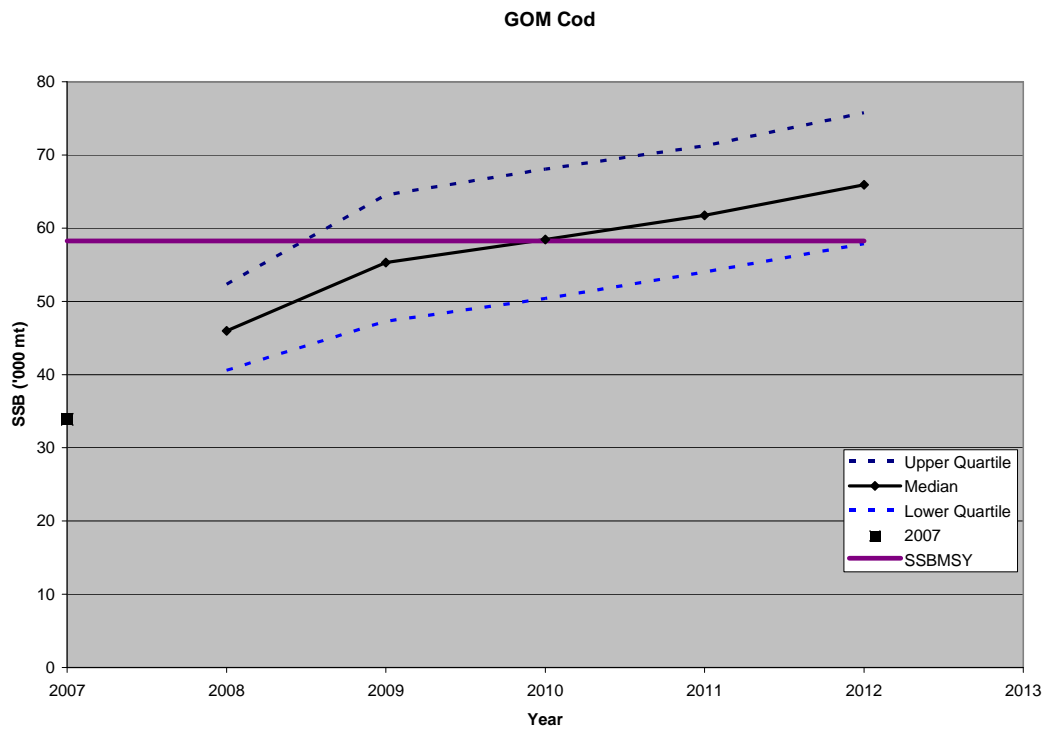


Figure 26 – GB haddock: short-term projection with catch at ABC

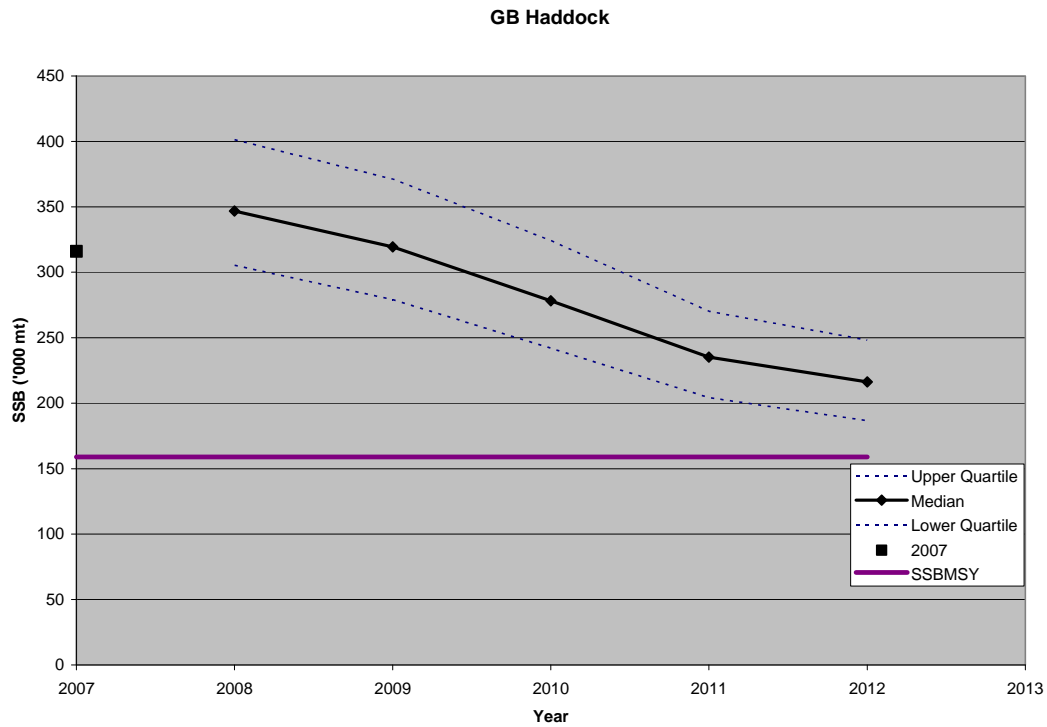


Figure 27 – GOM haddock: short-term projection with catch at ABC

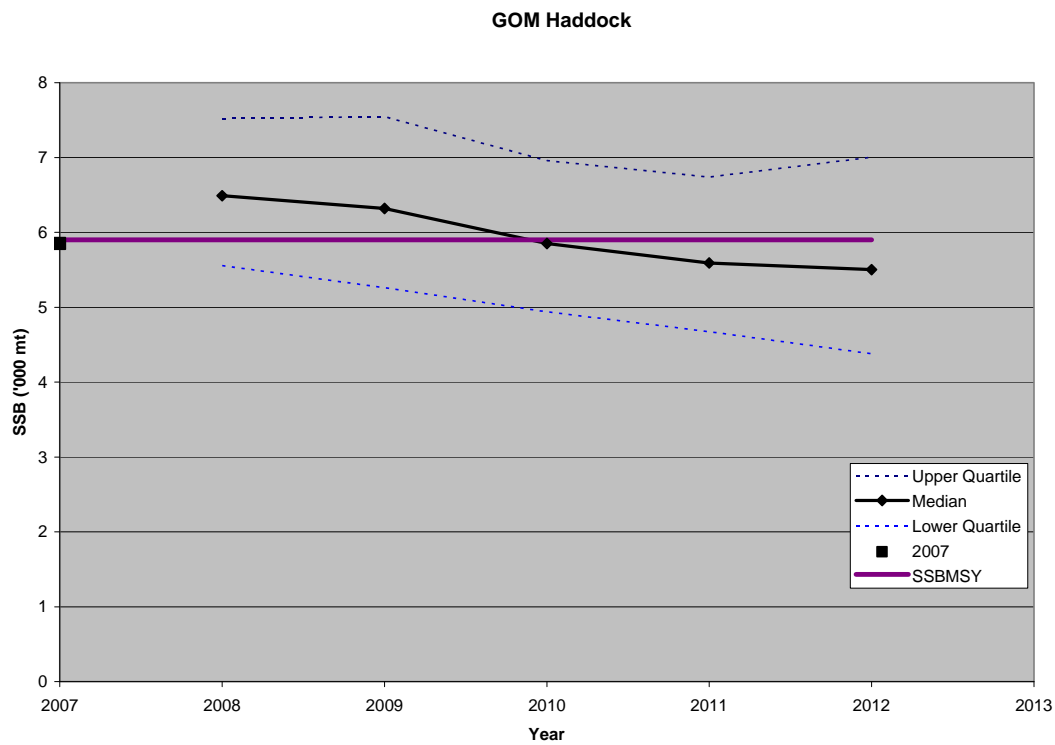


Figure 28 – GB yellowtail flounder (including): short-term projection with catch at ABC

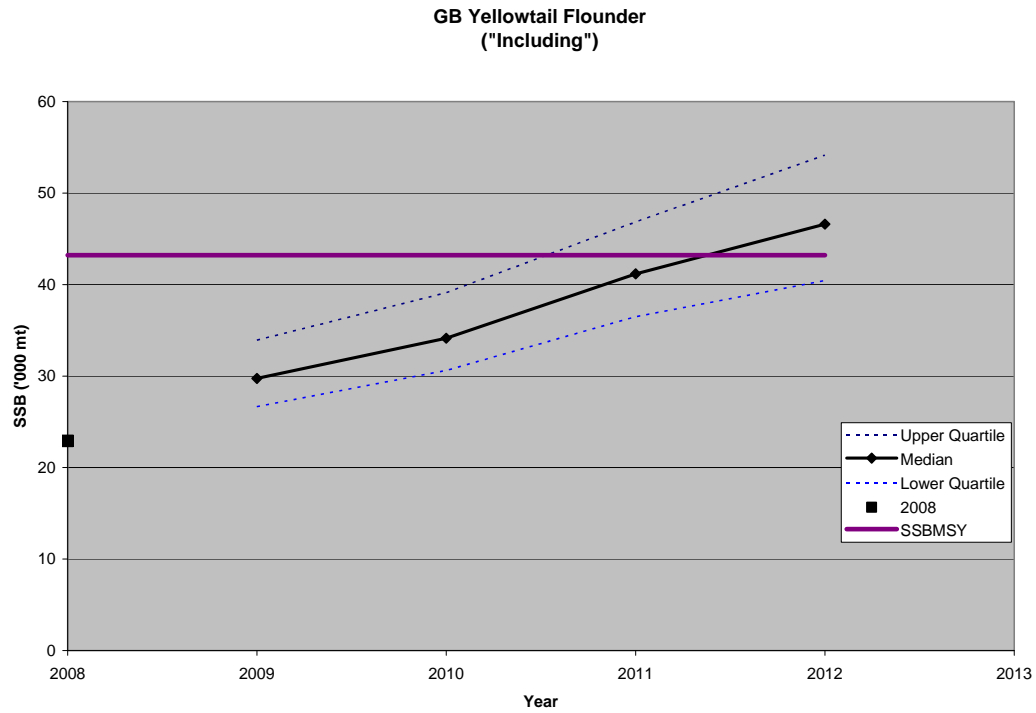


Figure 29 – GB yellowtail flounder (excluding): short-term projection with catch at ABC

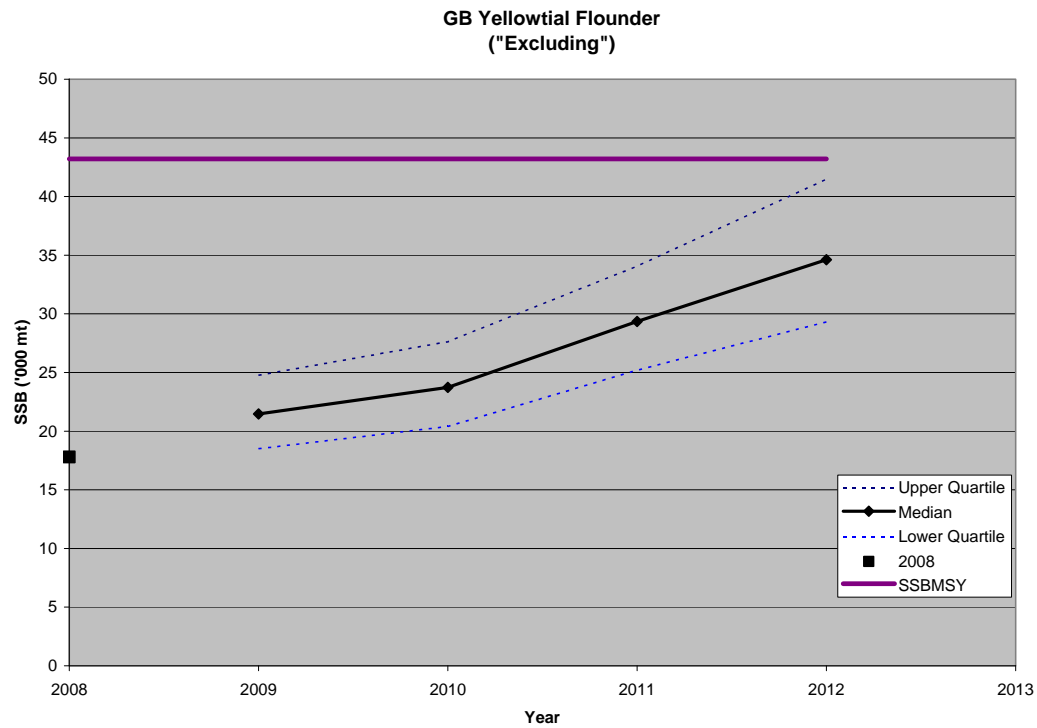


Figure 30 – CC/GOM yellowtail flounder: short-term projection with catch at ABC

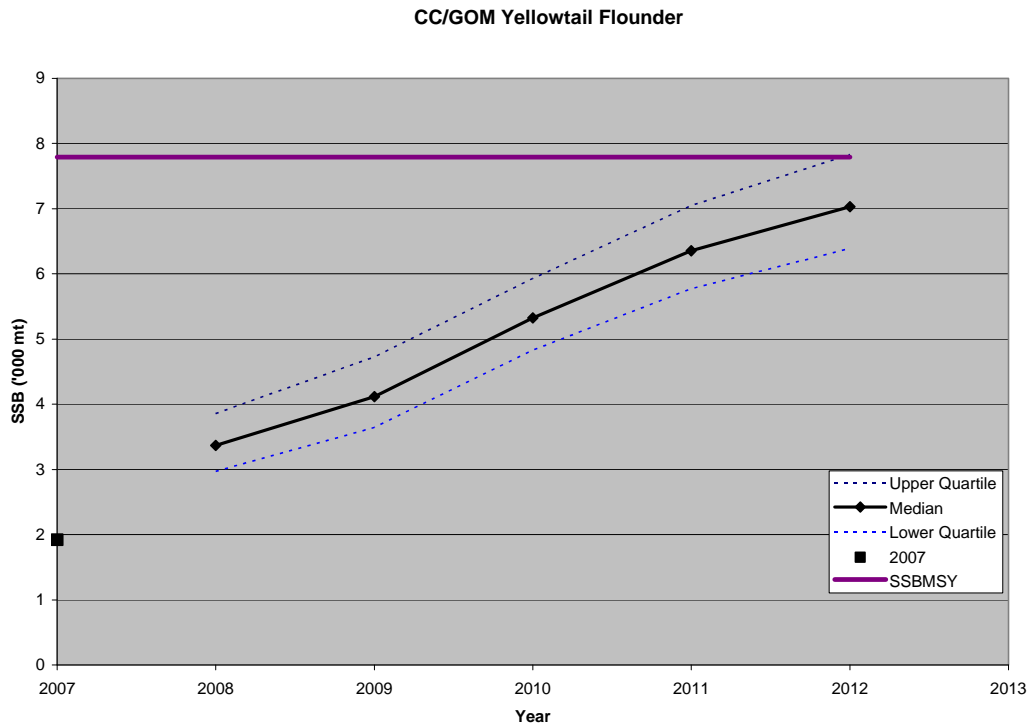


Figure 31 – SNE/MA yellowtail flounder: short-term projection with catch at ABC

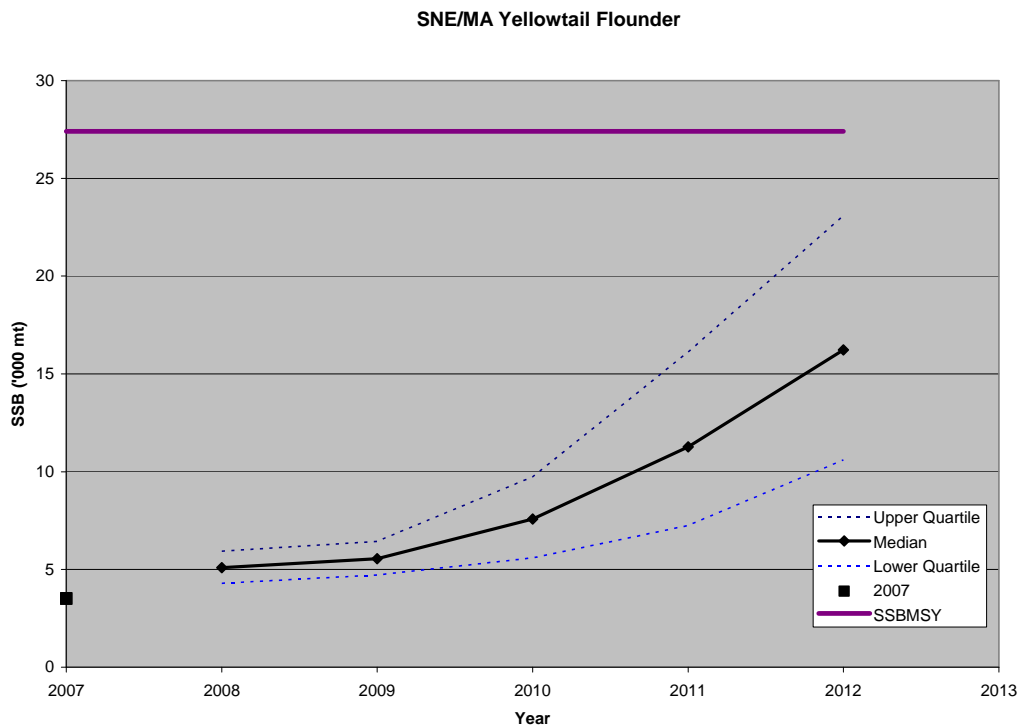


Figure 32 - American plaice: short-term projection with catch at ABC

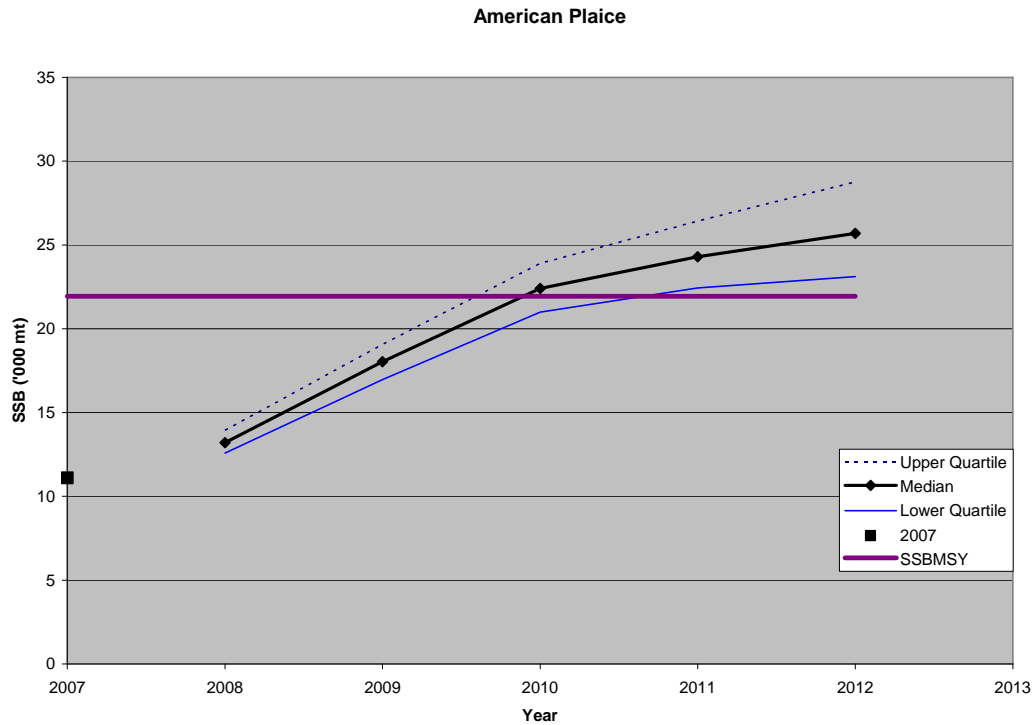


Figure 33 – Witch flounder: short-term projection with catch at ABC

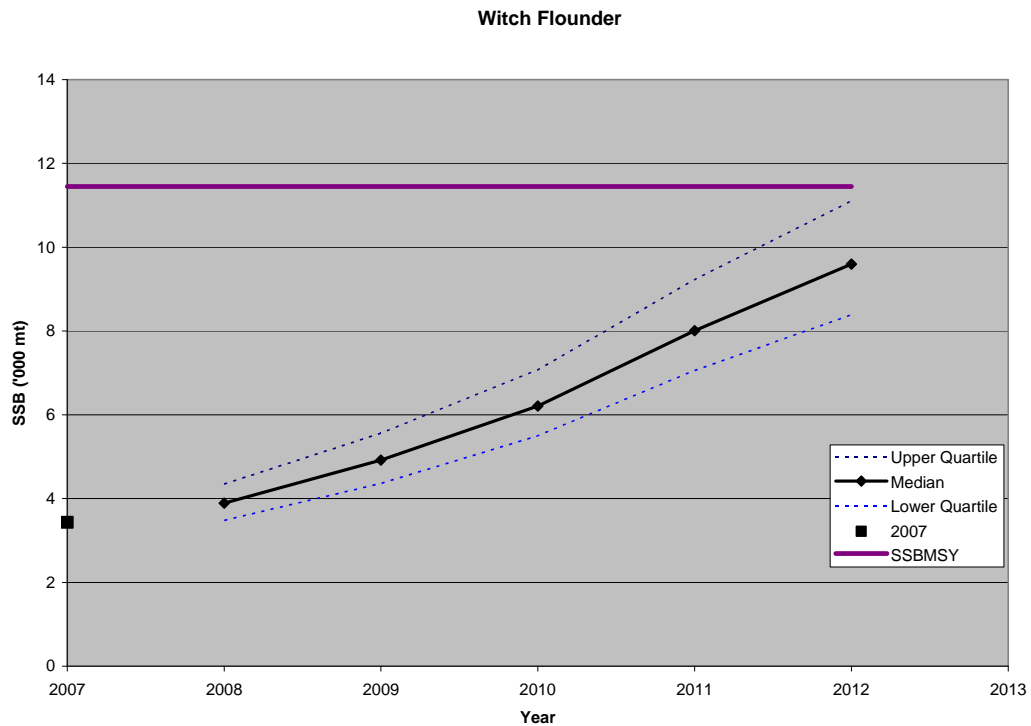


Figure 34 – GB winter flounder: short-term projection with catch at ABC

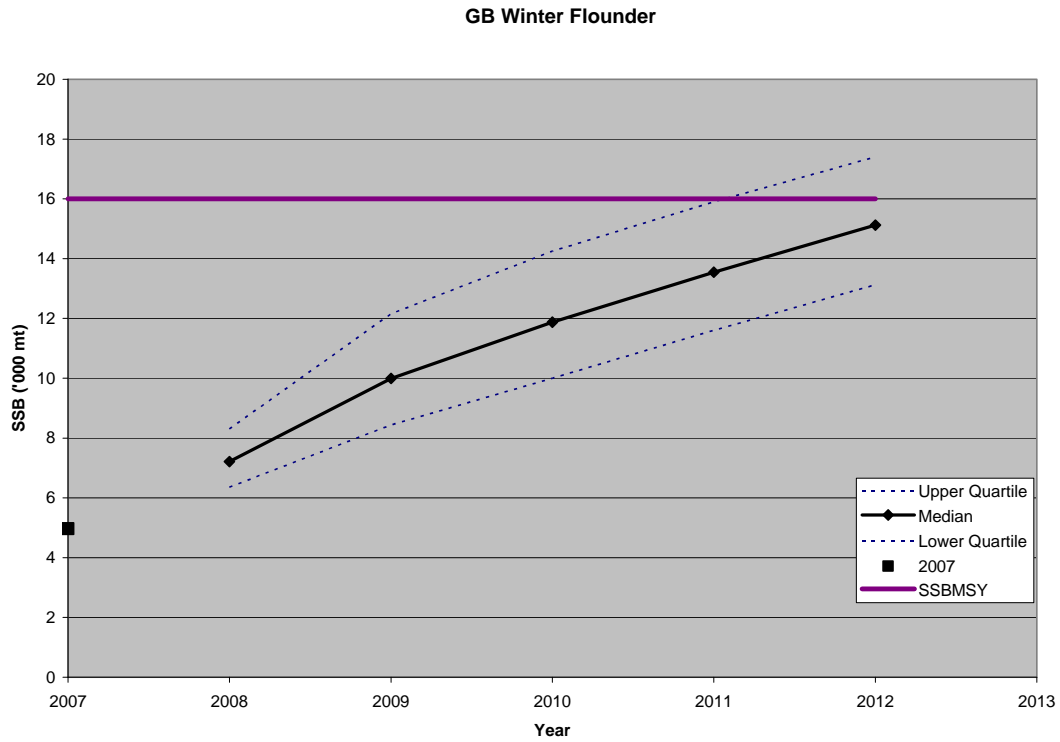


Figure 35 – SNE/MA winter flounder: short-term projection with catch at ABC

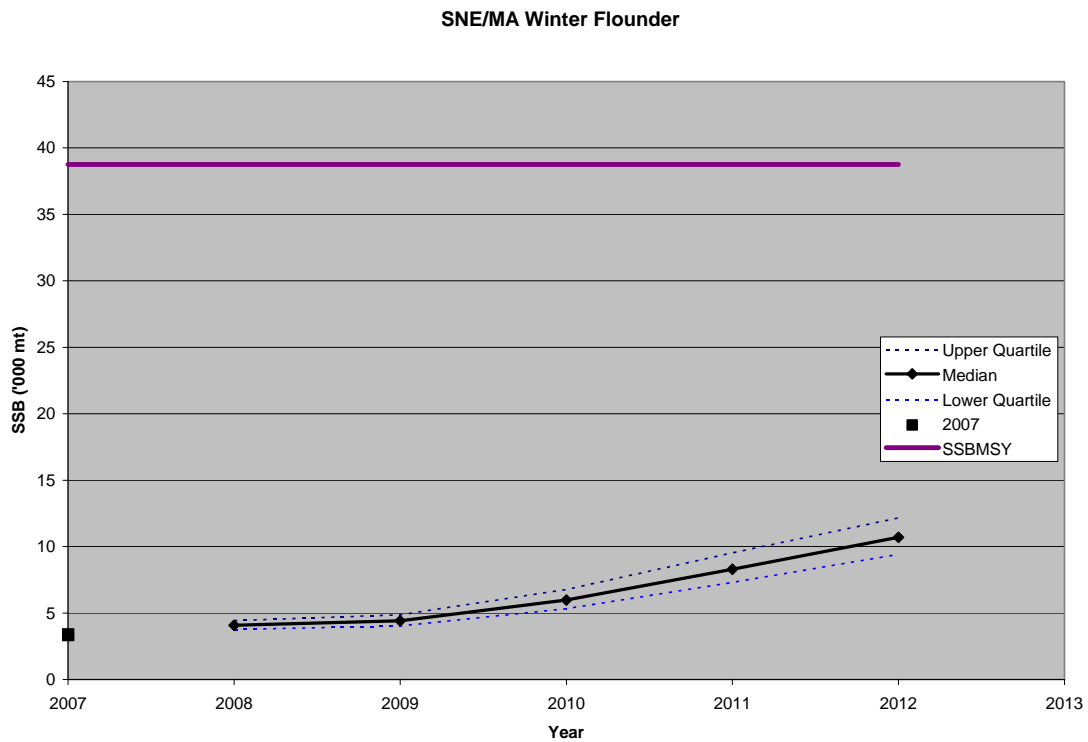


Figure 36 – Redfish: short-term projection with catch at ABC

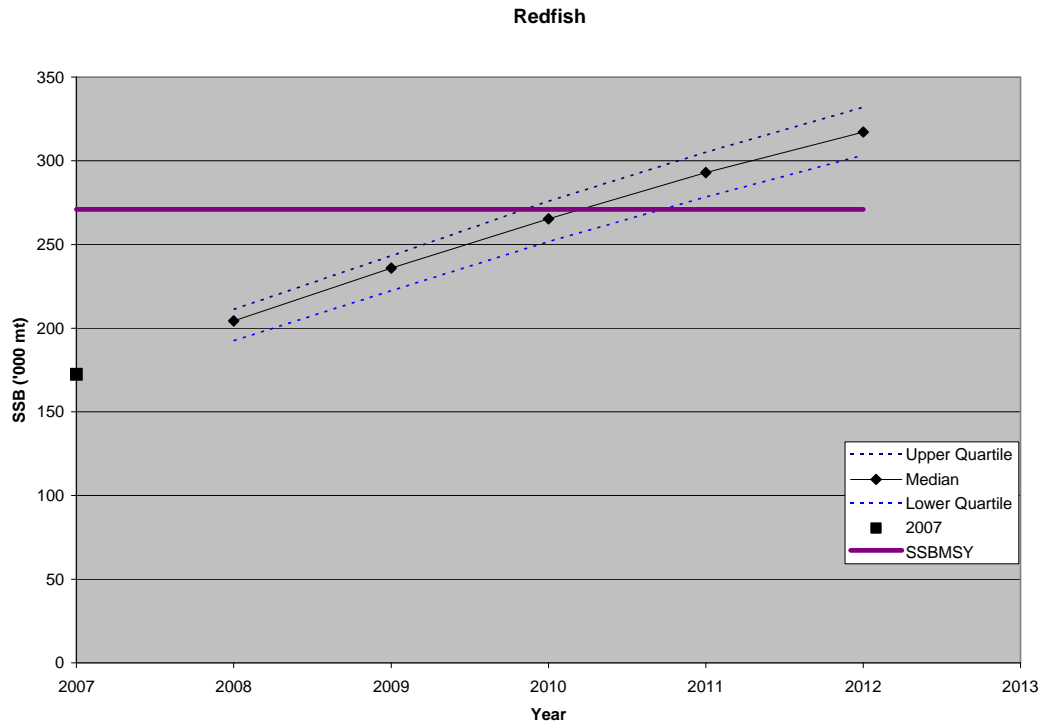


Figure 37 – Atlantic halibut: short-term projection with catch at ABC

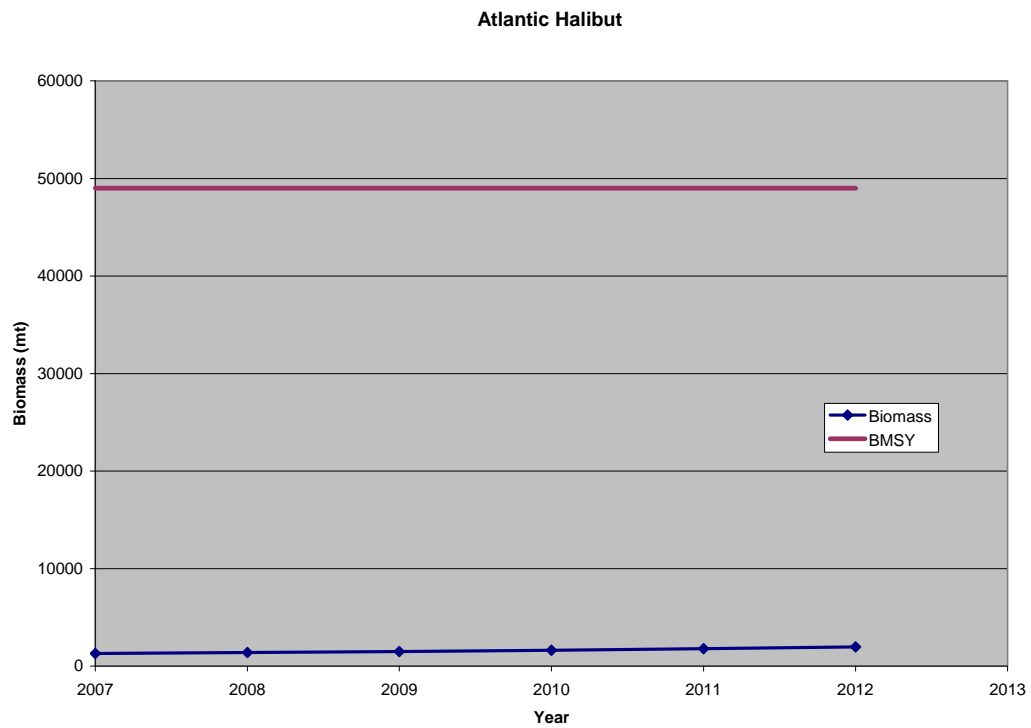


Table 80 – Probability that overfishing occurs ($F > F_{MSY}$) if catch is equal to ABC

(1) Two results shown for GB yellowtail flounder because two assessment runs are used for this stock

(2) Assessment/projection model does not allow calculation of probability of overfishing

Species	Stock	2010	2011	2012
Cod	GB	0.118	0.153	0.170
Cod	GOM	0.133	0.148	0.159
Haddock	GB	0.027	0.020	0.018
Haddock	GOM	0.003	0.013	0.014
Yellowtail Flounder ⁽¹⁾	GB	0.000	0.000	0.000
Yellowtail Flounder ⁽¹⁾	GB	0.000	0.000	0.000
Yellowtail Flounder	SNE/MA	0.000	0.001	0.046
Yellowtail Flounder	CC/GOM	0.035	0.040	0.051
American Plaice	GB/GOM	0.003	0.019	0.057
Witch Flounder		0.078	0.123	0.150
Winter Flounder	GB	0.184	0.191	0.199
Winter Flounder ⁽²⁾	GOM			
Winter Flounder	SNE/MA	0.000	0.000	0.000
Redfish		0.000	0.000	0.000
White Hake ⁽²⁾	GB/GOM			
Pollock ⁽²⁾	GB/GOM			
Windowpane ⁽²⁾	GOM/GB			
Windowpane ⁽²⁾	SNE/MA			
Ocean Pout ⁽²⁾				
Atlantic Halibut ⁽²⁾				

As part of the ACL process, the ABC of each stock is distributed to various sub-components. As described in Amendment 16, some of these sub-components are considered sub-ACLs and are subject to AMs. These include the groundfish fishery ACL for all stocks. For GOM haddock and GOM cod, the recreational and commercial groundfish fishery components receive an allocation that is a sub-ACL subject to AMs. Within the commercial groundfish fishery, the ACL is distributed to the common-pool and sector vessels based on sector membership. In the case of GB and SNE/MA yellowtail flounder, the scallop fishery receives a specific allocation. While in FY 2010 this is considered a sub-component that does not have specific AMs, beginning in FY 2011 these allocations are treated as sub-ACLs and the scallop fishery will be subject to AMs if they are exceeded.

There are two components that are not considered ACLs and are not subject to individual AMs: state waters catches that occur outside of the management plan (that is, by state permitted vessels) and an “other” sub-component that accounts for small catches of each stock in a number of fisheries. In most instances these values are five percent or less. There are a few exceptions. Recreational catches of GOM and SNE/MA winter flounder occur primarily in state waters and result in a larger percentage of the ABC assumed caught in state waters. This is also the case with pollock, but to a lesser extent. Commercial catches of windowpane flounder within state waters also result in an increased proportion assumed to be caught in state waters by vessels with state permits.

The overall result of the distribution of the ABC and the ACL to the various components is that the portion of the catch that is controlled by the specific FMP management measures differs from stock to stock. Since measures are only applicable to a portion of the fishery there may be some uncertainty over the ability of the management plan to control catches. As an example, the federal management plan has no authority to control catches within state waters by vessels that do not hold a federal permit. In the case of SNE/MA winter flounder, this means that as much as 30 percent of the ABC may not be controlled by measures of the federal plan. The attainment of mortality goals will either require more onerous restrictions on federal permit holders or complementary action by state authorities. To the extent the proposed specifications correctly capture the proportion of each stock that is caught by these other sub-components, the plan is more likely to achieve the mortality targets. It should be noted that the AM system does subject all catches to an AM, even if specific management measures do not address a component of the fishery. If the overall ACL is exceeded, AMs are triggered on the part of the fishery that can be affected by the AMs, even if the overage is the result of catches outside the purview of the management plan. As an example, if state waters catches of SNE/MA winter flounder lead to catches higher than the overall ACL, then the AMs are triggered for the federal component of the fishery.

Table 81 summarizes the proportion of each stock that is subject to the federal management measures based on the distributions proposed or assumed in this action. Some components – primarily the state waters catch – are not allocated by the Council, but represent an estimate of what will be harvested in state waters.

When compared to the No Action alternative, the Proposed Action setting of ACLs is likely to have a higher probability of achieving mortality targets since the ACL is set below the ABC, whereas in the No Action alternative the ACLs are set at the ABC.

ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS
Biological Impacts

Table 81 – Percent of each stock’s ABC expected to be subject to Northeast Multispecies FMP management measures

Stock	Percent of ABC
GB Cod	95%
GOM Cod	85% ¹
GB Haddock	95%
GOM Haddock	95%
GB Yellowtail Flounder	95%
SNE/MA Yellowtail Flounder	95%
CC/GOM Yellowtail Flounder	95%
Plaice	95%
Witch Flounder	95%
GB Winter Flounder	95%
GOM Winter Flounder	70%
SNE/MA Winter Flounder	87%
Redfish	95%
White Hake	95%
Pollock	88%
N. Windowpane Flounder	70%
S. Windowpane Flounder	70%
Ocean Pout	95%
Atlantic Halibut	45%
Atlantic Wolffish	95%

(1) An unknown portion is caught by recreational vessels in state waters outside the FMP.

As previously noted there are some distributions to sub-ACLs, each subject to AMs. While these allocations do not change the size of the ABC/ACL, they may have different biological impacts because the exact measures that control catch may differ between the sub-components. As an example, there are separate allocations to the commercial common-pool and sector vessels for most groundfish stocks (the exceptions are the windowpane flounder stocks, ocean pout, SNE/MA winter flounder, and Atlantic wolffish). In this instance the allocation is based on the vessels that commit to sectors – the sum of the Potential Sector Contribution (PSC) for the vessels within sectors determines how much is allocated. Based on the sector rosters as of September 1, 2009, the majority of the allocated stocks will be assigned to sectors (see Table 64). This means that the majority of these stocks allocated to the groundfish fishery will be subject to a hard TAC and extensive monitoring requirements. The assumption is that these types of measures will increase the likelihood that fishing mortality targets are met. In the case of GOM cod and GOM haddock, because parts of these stocks are allocated to the recreational fishery, a substantial portion of the stocks will have less certain management controls. These factors were considered in determining the difference between the ABC and the ACL for each stock, and stock-specific evaluations are described in Appendix III.

In the case of yellowtail flounder there may be different impacts over the period addressed by this action. While in FY 2010 the yellowtail flounder allocated to the scallop fishery is treated as an other sub-component and is not subject to a scallop-fishery AM, in subsequent years these allocations will be subject to specific AMs. So in FY 2010 there may be less certainty about achieving mortality targets, but this likelihood should increase in FY 2011 and beyond. While there are AMs on the portion of the scallop fishery catch of yellowtail flounder taken in the CAI, CAII, and NLCA access areas, these do not control overall catches of yellowtail flounder by the

scallop fishery. When compared to No Action, there is more control over catches of yellowtail flounder and as a result more certainty that mortality targets will be met.

This measure also implements incidental catch TACs for special management programs. Incidental catch TACs were established to limit catches of groundfish stocks of concern when vessels in the common pool use Category B DAS to target healthy stocks. They apply to the Category B regular DAS program and certain special access programs (SAPs). The incidental catch TACs are a percentage of the common pool ACL and thus do not result in an increase in catch. The size of these TACs depends on the number of vessels that remain in the common pool and the PSC associated with those vessels. Based on the September 1 sector rosters, the incidental catch TACs are small for many stocks in some programs. In some cases they are small enough that NMFS may not be able to allow the SAP to open because of an inability to monitor the small TACs. If this occurs, then access to healthy stocks will be limited and fishing mortality for those stocks may be lower than if the SAP opens. Based on the September 1, 2009 sector rosters, it is not likely that the lack of access to special management programs will have a noticeable impact on the fishing mortality of healthy stocks because the small incidental catch TACs will limit the catches within those programs if they are open. In FY 2007 and FY 2008 only small amounts of the incidental catch TACs were caught (see Table 82). These TACs are smaller than the ones that would result under No Action, reducing the risk mortality targets will be exceeded.

Table 82 – Recent catches of incidental catch TAC stocks. Values in metric tons unless otherwise described

	FY 2007		FY 2008	
	TAC	Total - mt	TAC	Total - mt
GB Cod		3.3		0.6
GOM Cod	99	3.6	103.9	2.4
GB YTF		0.0		0.0
CC/GOM YTF	10.8	0.3	14.1	<=10 lbs.
SNE/MA YTF	2.1	0.0	3.1	0.0
GB WFL	32.1	<=10 lbs.	35.6	<= 50 lbs.
SNE/MA WFL	30.2	0.1	35.8	<=10 lbs.
Plaice	205.2	1.3	256.1	0.1
Witch	253.8	1.6	216.6	0.1

Impacts on Non-Groundfish Species

Adopting the proposed specifications is not expected to have direct impacts on non-groundfish species. Indirect effects are generally likely to be beneficial. The specifications, when combined with the AMs adopted by Amendment 16, could reduce 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. Because the catches in this measure are slightly less than under No Action, the Proposed Action may slightly benefit non-groundfish species.

7.1.1.1.1.1 Yellowtail Flounder Allocation to the Scallop Fishery

This measure allocates a portion of the yellowtail flounder ACL to the scallop fishery to account for incidental catches in that fishery. In FY 2010, the allocations to the scallop fishery are

considered an “other sub-component” and are not subject to specific scallop fishery AMs. In subsequent years the allocation is considered a sub-ACL and the scallop FMP, through Amendment 15 (to be implemented in 2011) will adopt AMs to control these catches. Two options are considered for the amounts that will be allocated, each with slightly different biological impacts to groundfish stocks. In general, both options merely allocate part of the annual catch limit between the two fisheries and should not lead to catches that exceed mortality targets. But the options may distribute the catches differently, which may have some impacts.

Allocations are proposed for two stocks - GB yellowtail flounder and SNE/MA yellowtail flounder. In FY 2010 the allocation is considered an “other sub-component” and as such is not subject to AMs. The allocation is 100 percent of the amount the scallop fishery is expected to harvest. This value was calculated by taking into account recent discard rates in the scallop fishery and projected changes in scallop and yellowtail flounder stock sizes. In FY 2011 and FY 2012, the allocations are sub-ACLs and are 90 percent of the amount the scallop fishery is expected to catch if they harvest the projected scallop yield. These amounts of yellowtail flounder were estimated by comparing recent discard rates, projected increases in scallop and yellowtail flounder abundance, and future scallop yields. The scallop fishery catch of CC/GOM yellowtail flounder is estimated to be a small amount and so a specific allocation is not made; catches are considered part of the “other sub-components.”

In FY 2010, as mentioned, the yellowtail flounder allocations do not have specific AMs that control the overall yellowtail flounder catch. If the scallop fishery fishes in CAI, CAIL, or the NLCA, it is limited to harvesting 10 percent of the ACL from within those areas, but there are no controls on the catch outside those areas. Should the scallop fishery exceed the amount of yellowtail flounder that is allocated, then if the groundfish fishery harvests its allocation the total catch of yellowtail flounder could exceed the ACL. While the ACL is set well below the overfishing level for both stocks and it is unlikely that total catches will approach this amount, rebuilding fishing mortality targets may not be met since the ACL is set closer to the ABC.

This result is less likely in subsequent years. While the exact scallop fishery AMs are still being developed, these AMs will create an incentive for scallop fishermen to control yellowtail flounder catches to avoid triggering the AMs. The result may be reduced catches of yellowtail flounder by the scallop fishery. Under No Action, there are no limits on the overall catch of GB and SNE/MA yellowtail flounder by the scallop fishery, increasing the risk total catches will exceed the overall ACL, particularly after FY 2010.

With respect to CC/GOM yellowtail flounder, this measure does not identify a specific allocation for the scallop fishery. The measure proposes that scallop fishery catches of this stock be considered part of the “other sub-components” part of the overall ACL. Scallop dredge discards as a percentage of the total catch from this stock have fluctuated during the period 2003 – 2007, in recent years, ranging from 0.6% to 5.6% percent (see Table 83). The amounts expected to be harvested by the scallop fishery are within this range. Other fisheries that may take small amounts of CC/GOM yellowtail flounder include state waters fisheries, the whiting fisheries, and the northern shrimp fishery. If scallop fishery catches remain low, then considering this catch part of an other sub-component does not risk mortality targets. As the scallop fishery catch increases, however, it becomes more likely that the total catch by these other fisheries may exceed the amount allocated to the other sub-component category. The likelihood of this occurring can be partially controlled by the selection of scallop management alternatives that minimize yellowtail flounder catches.

Table 83 – Recent scallop dredge catch of CC/GOM yellowtail flounder (Source: GARM III)

Year	Scallop Dredge Catch	Total Catch	Dredge Discards as Percentage of Total Catch
2003	25	1970	1.3%
2004	18	1186	1.5%
2005	6	997	0.6%
2006	11	620	1.8%
2007	35	627	5.6%

This option does not modify the amount of yellowtail flounder than can be taken inside the Georges Bank access areas. That amount is still limited to 10 percent of the ABC. The distribution proposed in this action will not have any impact on the amount of yellowtail flounder that can be taken by the scallop fishery within the CAI, CAII, and NLCA access areas. In this respect this option does not differ from No Action.

Impacts on Non-Groundfish Stocks

The allocation of yellowtail flounder to the scallop fishery will have the most direct impacts on scallop stocks. If scallop fishermen cannot control the rate of incidental catches to the amount of yellowtail that is allocated, some scallop yield will be foregone. This could reduce fishing mortality on sea scallops. The extent that this occurs will depend not only on actual discard rates, but on what AMs are in place for the scallop fishery in future years. Estimates are that the scallop fishery will forego approximately 2,100 mt of scallop yield (meat weight) in FY 2011 and 1,700 mt of scallop yield in FY 2012. It is expected these reductions will likely occur in open areas rather than access areas.

There may also be impacts on other stocks caught in the sea scallop and groundfish fisheries. For example, if sea scallop fishing activity is reduced because of yellowtail flounder incidental catches, catches of skates, monkfish, and other species caught by scallop fishermen may be reduced. Similar effects on a wider range of species may occur if the groundfish fishery loses effort as a result of allocating yellowtail flounder to the scallop fishery. Catches could be reduced of monkfish, skates, lobster, fluke, and other species caught by trawl fishermen. Since limits on GB and SNE/MA yellowtail flounder catch would not be in place under No Action, catches of other species could be higher.

7.1.1.1.1.2 Sub-option 2 – U.S./Canada Resource Sharing Understanding TACs

The proposed TACs were set at levels that correspond to the fishing mortality rates consistent with the management strategy agreed to under the Understanding, as well as with the recommendation of the Science and Statistical Committee (SSC; for GB yellowtail flounder). Under the Understanding, the strategy is to maintain a low to neutral risk of exceeding the fishing mortality limit reference ($F_{ref} = 0.18, 0.26, 0.25$, for cod, haddock, and yellowtail flounder, respectively). When stock conditions are poor, fishing mortality rates should be further reduced to promote rebuilding. The recommended 2010 TACs for cod, haddock, and yellowtail flounder were based upon the most recent stock assessments (TRAC 2009a, 2009b, 2009c). The 2010 TACs for Eastern GB cod and haddock were recommended by the Transboundary Management Guidance Committee (TMGC), based upon the fishing mortality strategy shared by both the

United States and Canada. The proposed TAC for GB yellowtail flounder was based upon the requirements of the Northeast Multispecies Fishery Management Plan (FMP) and the recommendation of the SSC. The full justification for the proposed TACs is described in Section 3.1.1.2 of this EA.

Based upon fishing years 2004 through 2008, information on catch (landings and discards) from the U.S. Canada Management Area, the management measures implemented by Amendment 13 and subsequent framework adjustments have restrained the catches of GB cod, haddock, and yellowtail flounder, to below their respective TACs with one minor exception. In FY 2007, the catch of GB yellowtail flounder exceeded the TAC by nine percent due to some late reporting and because a portion of the yellowtail catch by the scallop fleet was not considered until after the end of the fishing year. A downward adjustment was made in the size of the 2008 TAC. In order to prevent such an overharvest from recurring, the monitoring methodology was modified to evaluate the amount of yellowtail catch from the scallop fishery more frequently.

Based upon preliminary information, NMFS does not anticipate that there will be an overage (i.e., the catch will not exceed the TAC) for FY 2009 for Eastern GB cod, Eastern GB haddock, or GB yellowtail flounder.

Although it is not possible to separate out the precise impact of the hard TACs on the overall pattern of fishing behavior and landings, the TACs and associated regulations have played an important role in determining fishing patterns on GB, as further explained in the Economic Impacts of the proposed TACs. Because the proposed TACs are based upon fishing mortality rates that are in accordance with the Understanding and the FMP, and the management measures that are associated with the U.S. Canada Management Area have been demonstrated to effectively control fishing effort, the proposed TACs are appropriate and will contribute toward the growth of the GB cod and yellowtail flounder stocks, and the maintenance of the GB haddock stock. Because the TACs will contribute toward the growth and maintenance of the stocks, the biological impacts will be positive. As a result of the likely implementation of Amendment 16 in FY 2010 there will be a wide range of substantive regulatory changes and potential changes in fishing behavior in the groundfish fishery, which arguably could result in a greater risk that the U.S./Canada TACs will be exceeded. However, it should be noted that the ACLs specified in FW 44 account for management uncertainty, and Amendment 16 management measures include many tools for monitoring of the fishery.

In contrast, as described in Section 6.1.2.1.1, the biological impacts of the No Action Alternative, would be primarily negative. The No Action Alternative does not represent the appropriate level of TACs from a biological perspective, and would allow fishing mortality to be too high. Allowing an excessive amount of fish to be caught would represent a level of fishing mortality that exceeded the desired level of fishing mortality. If the appropriate levels of fishing mortality were exceeded, it is likely that stock rebuilding would be slowed. Under the No Action Alternative (with no TACs specified), it is possible that excessive harvest could occur for all three shared stocks. Since 2004, the U.S./Canada TACs have proved effective at controlling fishing effort on the shared stocks, in a precise manner, which would not be possible under the DAS system in place in the NE multispecies fishery at-large.

7.1.1.1.2 Commercial Fishery Effort Control Modifications

7.1.1.1.2.1 Option Two – Modification of Trip Limits

This option proposes to modify the trip limit for GOM cod to 800 lbs/DAS with a maximum of 4,000 lbs./trip. A trip limit for pollock is also adopted, at 1,000 lbs./DAS and 10,000 lbs./trip. These two trip limits will be implemented at the start of the fishing year. If Option 3 is also adopted (Section 3.2.2) the Regional Administrator may adjust the limits during the course of the fishing year to allow the ACL to be harvested or to reduce the likelihood that it will be exceeded. Finally, the yellowtail flounder trip limits applicable to limited access scallop vessels are removed. These changes will be discussed in order for their impacts on groundfish stocks.

Adopting the trip limit for reduces the amount of cod that the common pool vessels are able to land. The limit reduces, but does not eliminate, the difference between the ACL for the common pool and the potential landings from these vessels. The maximum landings if every DAS is used and the trip limit is caught on every DAS is reduced to about 1,306 mt, or roughly four times the ACL for the common pool vessels (based on September 1, 2009 sector rosters). This is less than the maximum landings under No Action: 3,266 mt. When compared to No Action, this alternative reduces the likelihood that the GOM cod ACL will be exceeded by common pool vessels.

The sector rosters, however, may change before the beginning of the fishing year since permits can be withdrawn from sectors until May 1, 2010. Some sense of the impacts of this proposed trip limit if permits do withdraw from sectors can be obtained by making assumptions about sector membership. While participation in sectors is likely based on a number of factors, if assumed that the decision is primarily based on the amount of GOM cod that can be caught the permits can be identified that have the potential to land more cod in the common pool than in sectors if the proposed trip limit is adopted. This assumption is likely not valid but does provide some idea of the effect of the trip limit under different levels of sector membership. With the proposed trip limit of 800 lbs./DAS, approximately 15,700 DAS would be expected to remain in the common pool if the decision was based solely on potential GOM cod landings. The resulting ACL for the common pool would be approximately 1,700 mt while the potential landings under DAS would be about 6,700 mt.

These simplistic calculations have several weaknesses. First, only baseline allocated DAS are used; there could be carry-over DAS that increase the number of DAS available to the fleet. The percentage of baseline DAS that do not get used – and thus are available as carry-over DAS in the following year – has averaged 16.7 percent since FY 2004, within a narrow range of 15.2 percent to 17.4 percent. Second, the analyses assume that the full GOM cod trip limit is caught on every DAS. This has never been the case; some DAS get used in other areas, and even for DAS used in the GOM the GOM cod trip limit is not caught on every DAS and on every trip. Second, the analysis assumes that every DAS is used. Again, this has never occurred. Information in Section 5.6.4 shows that DAS used as a percentage of all DAS allocated (baseline and carry-over DAS) has ranged between 62.6 percent and 67.6 percent since FY 2004. Even if only the DAS are considered that are allocated (or acquired through leasing) to permits that use DAS, the percentage of DAS used has been between 70 and 76 percent since FY 2004; a slowly increasing trend is evident.

If the observed trends in carry-over DAS continue, permits committed to the common pool would have about 4,600 DAS available. If the rate of use matches recent observations, about 65 percent

would be used. Multiplying these values by the proposed trip limit results in potential landings of 1,093 mt, or about 16 percent less than the initial estimate.

Landings are only one source of fishing mortality; discards also contribute. One likely result of the 800 lb./trip limit is that GOM cod discards would remain high. Current stock size is projected to be close to, or perhaps even higher than, SSB_{MSY} (see Figure 25), yet the proposed trip limit is the same as that adopted in Amendment 13 when stock size was less than one-fourth the current projected stock size. There is evidence that discards of GOM cod increased with increases in stock size⁵ in recent years (see Figure 38), and the ratio of cod discarded to cod landed has increased as well (see Figure 39). To the extent that regulatory discards of GOM cod are proportional to increases in stock size, discard rates for common pool vessels are likely to increase under this measure from recently seen values. Under the No Action alternative, the trip limit is larger, so regulatory discards resulting from the trip limit would likely be smaller; this measure would probably increase discards when compared to No Action as well.

This measure also adopts a pollock trip limit of 1,000 lbs./DAS and 10,000 lbs./trip. Under existing regulations and the No Action alternative there is no trip limit for pollock. This makes it difficult to do an analysis similar to that for GOM cod because it is not clear how much pollock the vessels in the common pool can catch absent a trip limit. As noted in Section 5.6.4 the vessels committed to the common pool as of September 1, 2009 only have small PSCs for pollock that total 4.31 percent, indicating they did not actively target this species during the qualification period. The pollock ACL for these vessels is about 118 mt, or 261,110 lbs. Unlike cod, pollock is a relatively low value species and large volumes are needed to be profitable. It is not clear if these identified common pool vessels will target pollock if a trip limit is not adopted, nor is it clear that other vessels will leave sectors based solely on potential pollock catches. Under No Action, there is no pollock trip limit and there would be an increased risk that pollock ACLs might be exceeded.

⁵ Regulatory discards are presumed sensitive to trip limits. During the period described the trip limit for GOM cod was 800 lbs./DAS with the exception of May – November 2006 when it was reduced to 600 lbs./DAS.

Figure 38 – Commercial discards of GOM cod, CY 2004 – 2008. Values for 2008 are preliminary.

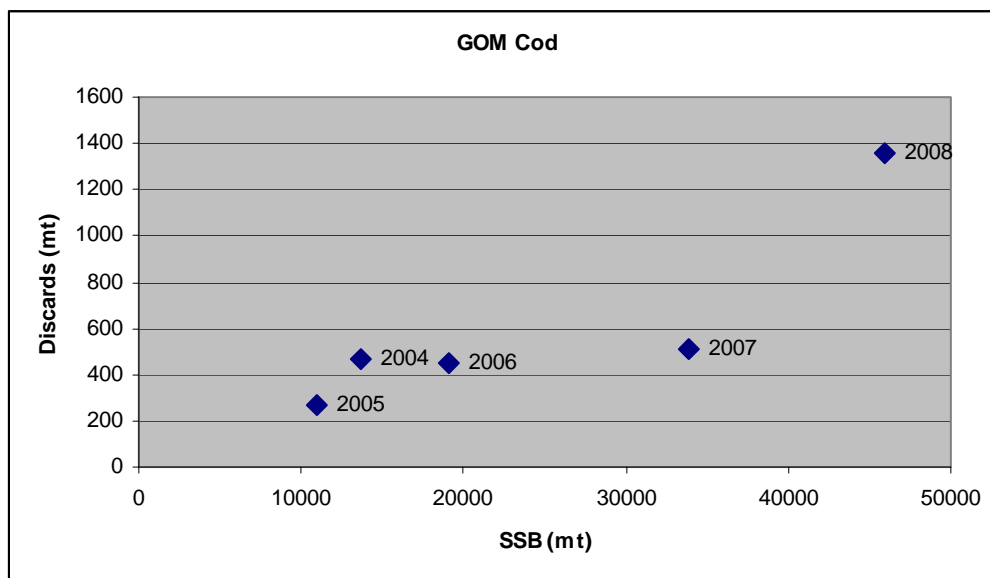
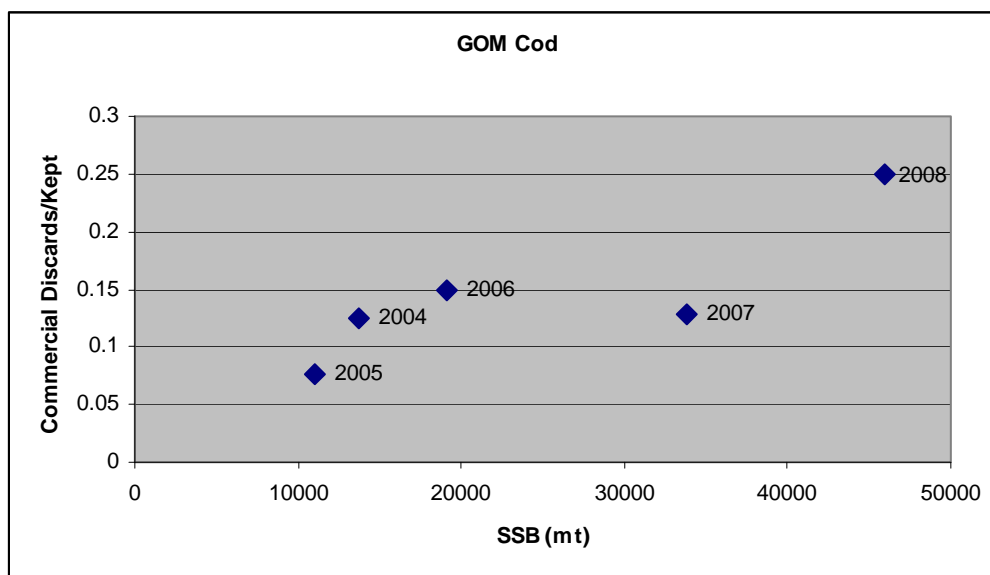


Figure 39 – Commercial discard/kept ratio for GOM cod, CY 2004 – 2008. Values for 2008 are preliminary.



The adoption of the pollock trip limit does cap the potential landings by common pool vessels at 1,632 mt if the trip limit is landed on all baseline DAS and all DAS are used. When carry-over DAS and DAS use rates are taken into account the landings are capped at 1,366 mt. Either value is well above the ACL for the common pool. And as is the case with GOM cod, these estimates do not consider discards. Analysis of this trip limit for Amendment 16 suggested that it would result in increased discards of pollock to 58 percent of landings.

This measure also proposes to remove the yellowtail flounder trip limit for limited access scallop vessels and require them to land all legal-sized yellowtail flounder. Adopting this requirement should reduce discards of yellowtail flounder as compared to No Action – almost all yellowtail flounder caught by limited access vessels is presently discarded. Recent discards are summarized below.

If this measure merely converts existing discards to landings, fishing mortality on yellowtail flounder would not increase from this change and there would be no change in yellowtail mortality when compared to No Action. A review of observer data shows that average catches (landings and discards) by scallop dredge vessels are usually below 300 lbs. for limited access vessels and are less than 50 lbs/ for general category vessels (Table 84). If scallop vessels – which have considerably reduced yellowtail flounder bycatch in recent years through gear modifications and revised management measures – decide to take advantage of this change and actively target yellowtail flounder then mortality targets may not be achieved. This is more of a concern in FY 2010 when the scallop catch of yellowtail flounder is not a sub-ACL and is not subject to scallop fishery AMs. It would be more of an issue if the proposed measure applied to the General Category Scallop fleet, which it does not. These vessels are limited to landing 400 lbs. of scallop meat weights per trip and do not have DAS restrictions. At a price of \$7.50/lb., scallop revenues per trip are \$3,000. A relatively modest amount of yellowtail flounder at \$1.50 per pound may provide enough revenue to encourage targeting behavior. Yellowtail flounder revenues will likely be less attractive to limited access scallop vessels landing on the order of 15,000 – 18,000 lbs. of scallop meat weights worth \$112,500 - \$135,000 per trip.

Requiring scallop vessels to land these fish may have ancillary benefits. Discard estimates are subject to error. To the extent that vessels comply with the requirement, better estimates of scallop vessel catches of yellowtail flounder should result than those under No Action.

Other biological impacts may result from the combination of this measure and the scallop fishery access area program. Again, if fishing behavior is not altered as a result of this measure, catches within the access area should not change and discards will be converted to landings. But if the vessels choose to take advantage of this regulation and target yellowtail flounder then when compared to No Action catches could increase and if this occurs in the access areas it may reduce the contribution of those areas to groundfish rebuilding. This could be an issue for CAII. Recent assessments indicate that the GB yellowtail flounder stock is heavily concentrated in this area. To the extent that the area is providing benefits to rebuilding by serving as a refuge for yellowtail flounder, increased targeting by any vessels in this area may slow rebuilding. It is not clear, however, that the area is serving in this fashion.

Changes in the GOM cod and pollock trip limits are not expected to have direct biological impacts on other species when compared to No Action. It is possible that the common pool groundfish vessels may modify behavior to catch other non-groundfish species to replace revenues lost because of the reduced trip limits. But the number of common pool vessels (based on September 1, 2009 sector rosters) and the limited DAS available to them make it unlikely that these measures will have substantial effects on fishing mortality for stocks such as skates and monkfish.

Table 84 – Number of observed trips and average yellowtail flounder caught per trip (2009 through July)

YEAR	PROGRAM	Limited Access Trips Observed	General Category Trips Observed	Total Trips Observed	Average YTF/Trip Limited Access (lbs.)	Average YTF/Trip General Category (lbs.)
2007	Open	25	19	44	230	5
	Train	2	6	8	0	6
	Turtle Chain	52	9	61	322	23
	NLCA	25	51	76	74	7
	CAI	33	18	51	107	16
	HUDS	35		35	2	
	ELF	53	2	55	1	0
2007 Total		225	105	330	125	9
2008	Open	42	13	55	222	4
	Train	8	5	13	82	0
	Turtle Chain	83	10	93	226	8
	NLCA	35	106	141	146	8
	CAI	2		2	179	
	HUDS	6		6	0	
	ELF	189	142	331	1	0
2008 Total		365	276	641	94	4
2009	Open	37	16	53	68	21
	Train	3		3	177	
	Turtle Chain	53	11	64	237	2
	CAI	23		23	1162	
	ELF	100	111	211	0	0
	DELMARVA	18	32	50	0	0
2009 Total		234	170	404	181	2
Grand Total		824	551	1375	127	4

7.1.1.1.2.2 Option 4 – Effort Control Measure Adjustments

This measure authorizes the Regional Administrator to adjust trip limits or DAS counting rates during the fishing year in order to facilitate harvesting the ACL or to reduce the likelihood the ACL is exceeded. Since sector membership will not be known with certainty until May 1, 2010, there is more uncertainty about the effectiveness of the effort control measures than with prior management actions. This option gives the Regional Administrator two tools that can be readily used should the measures prove to be misaligned with fishing activity in the common pool. The result is that there should be more certainty about maintaining catch at or below the applicable ACLs, increasing the likelihood that fishing mortality targets will be achieved when compared to No Action.

There is evidence in recent groundfish management that suggests this measure can be effectively applied. The Regional Administrator has effectively used authority to modify trip limits and other

measures to control the catch of GB yellowtail flounder under the provisions adopting the U.S./Canada Resource Sharing Understanding.

As for impacts of this measure on fishing mortality for non-groundfish species, this could result in an increase when compared to No Action if the Regional Administrator chooses to make groundfish management measures more restrictive. Groundfish fishing vessels may be forced into other fisheries to replace lost revenues. The ability to redirect effort will be limited by the type of in-season changes that are made. If the Regional Administrator increases DAS counting rates, then the ability to redirect effort into skates or monkfish fisheries would be limited because generally vessels must use DAS to participate in those fisheries. Trip limit changes would not similarly prevent effort shifts. If measures are made less restrictive, it may draw effort away from other fisheries and reduce fishing mortality on other stocks.

7.1.2 Biological Impacts of Alternatives to the Proposed Action

7.1.2.1 ACL Specifications – Impacts on Groundfish Stocks

7.1.2.1.1 Option One – No Action

The No Action alternative described in section 4.1.1 considers that M-S Act requirements mandate the implementation of ACLs in FY 2010 for stocks that are subject to overfishing. As a result, it is likely that NMFS would implement these provisions through either an interim or emergency action. While NMFS may implement ACLs at some level in order to meet statutory requirements, the agency is not likely to make allocation decisions typically considered the purview and responsibility of the Council. This may include the determination of adjustments to the ABC for management uncertainty, any changes to the distribution of available catch to fishery sub-components, and the allocation of yellowtail flounder between the groundfish and scallop fisheries. This is the assumption used to evaluate the biological impacts of the No Action alternative. Absent a clear statement of how NMFS would act, this seems the prudent course to follow, but this may over-estimate the negative biological impacts of the No Action alternative.

The No Action alternative assumes that NMFS will use the ABCs recommended by the Council's Science and Statistical Committee (SSC) as the limits on catch, or ACLs. The impacts on stock size of limiting catch to these levels can be estimated for stocks with age-based assessments and projections. Projection assumptions are fully described in Appendix III, and projection output is provided in Appendix IV. These projection results are shown in Figure 24 through Figure 37. On the surface, there is no difference between Option I - No Action and Option Two – Proposed Specifications with respect to future stock sizes. Because No Action considers that the ACL may be set equal to the ABC, however, there is less certainty about future stock size. Without an ACL adjustment for management uncertainty, AMs may not be triggered in time to keep catch below the ABC, or to modify future measures to account for an overage of the ABC/ACL.

Under No Action, a specific allocation of yellowtail flounder would not be made to the groundfish and scallop fisheries because while Amendment 16 proposes such an allocation the values are not specified. The only fishery catching yellowtail flounder that would be subject to an ACL and AM would be the groundfish fishery. The alternative assumes that NMFS would not determine a set-aside or assumed scallop fishery catch, so all of the yellowtail flounder would be

allocated to the groundfish fishery, state waters, or other sub-components. That portion of the fishery subject to hard TACs (i.e. sectors beginning in FY 2010 and the common pool in FY 2012) might have a TAC allocated that does not consider yellowtail flounder catches by the scallop fishery. This increases the likelihood that the catch of yellowtail flounder may exceed the ABC if the part of the fishery subject to hard TACs catches its full allocation and scallop catches are as estimated. Overfishing of yellowtail flounder is likely to result, which would threaten the rebuilding plans for the three stocks. This would be particularly problematic for GB and SNE/MA yellowtail flounder, the two stocks where successful rebuilding seems to be most at risk given the Council's current rebuilding progress and the selected rebuilding strategies.

The No Action alternative would not adopt U.S./Canada Resource Sharing Understanding TACs for FY 2010. Such TACs are developed by the Transboundary Management Guidance Committee, or TMGC. While the TMGC agreed to FY 2010 TACs for EGB cod and haddock, the group did not reach agreement for GB yellowtail flounder.

Under the U.S. management system, EGB cod and EGB haddock are a subset of the GB cod and haddock stocks that are assessed as a unit. EGB cod and EGB haddock are considered management units and not separate stocks; target catch levels (such as the ABC) for the U.S. fishery are based on the mortality requirements for the stock as a whole. Failure to adopt the U.S./Canada TACs for these two stocks thus affects where catch might be taken – since there is no limit on the catch from the U.S./Canada area – but should not affect overall catches unless no provision is made for the Canadian portion of the catch. This is most problematic for components of the fishery subject to hard TACs, since if Canadian harvests are ignored the TACs would be set too high and would likely lead to overfishing. For components of the fishery subject to effort controls, if the relative proportions caught by the Canadian and U.S. fisheries remain similar to recent shares then the effort controls should be correctly designed to control fishing mortality. There would be less certainty about achieving mortality targets for these two stocks since no part of the catch would be controlled by a hard TAC.

With respect to GB yellowtail flounder, the entire stock is subject to the U.S./Canada Resource Sharing Understanding. No agreement was reached by the TMGC for this stock. Under No Action a specific TAC would not be specified by the U.S. This means that the stock could not be managed with a hard TAC as has been the case since FY 2004. This hard TAC has been effective at controlling catches but overfishing still occurred in 2005 through 2008 because of assessment uncertainty. Under the No Action alternative there would be less certainty about controlling catches but this may or may not lead to more uncertainty about achieving mortality targets.

For all three stocks, it is not clear how the Canadian management authorities would react to the U.S. not implementing the TMGC recommendations as would occur under No Action. If Canadian authorities were to follow suit and not limit Canadian fishery catches to the TMGC levels, then the likelihood of overfishing increases. This could also threaten future agreements over catch levels and lead to longer term rebuilding problems.

7.1.2.1.1.1 Sub-option 1 - Yellowtail Flounder Allocation to the Scallop Fishery

This option also allocates a portion of the yellowtail flounder ACL to the scallop fishery to account for incidental catches in that fishery. It differs from the Proposed Action in that in FY 2010 the scallop fishery is assumed to catch only 90 percent of the GB and SNE/MA yellowtail flounder they are expected to harvest.

The biological impacts of this option are similar to the Proposed Action (see section 6.1.1.1.1.1). The only difference is in FY 2010 when the scallop fishery is assumed to harvest less yellowtail flounder. Since there are no AMs in place, nothing limits the scallop fishery to this amount.

In FY 2010, as mentioned, the yellowtail flounder allocations do not have specific AMs that control the overall yellowtail flounder catch. If the scallop fishery fishes in CAI, CAII, or the NLCA, it is limited to harvesting 10 percent of the ACL from within those areas, but there are no controls on the catch outside those areas. Should the scallop fishery exceed the amount of yellowtail flounder that is allocated, then if the groundfish fishery harvests its allocation the total catch of yellowtail flounder could exceed the ACL. While the ACL is set well below the overfishing level for both stocks and it is unlikely that total catches will approach this amount, rebuilding fishing mortality targets may not be met since the ACL is set closer to the ABC.

This result is less likely in subsequent years. While the exact scallop fishery AMs are still being developed, these AMs will create an incentive for scallop fishermen to control yellowtail flounder catches to avoid triggering the AMs. The result may be reduced catches of yellowtail flounder by the scallop fishery.

The impacts of this measure in FY 2011 and FY 2012 are similar to the Proposed Action.

Impacts on Non-Groundfish Stocks

Impacts on other stocks are similar to those of the Proposed Action. The allocation of yellowtail flounder to the scallop fishery will have the most direct impacts on scallop stocks. If scallop fishermen cannot control the rate of incidental catches to the amount of yellowtail that is allocated, some scallop yield will be foregone. This could reduce fishing mortality on sea scallops. The extent that this occurs will depend not only on actual discard rates, but on what AMs are in place for the scallop fishery in future years. Estimates are that the scallop fishery will forego approximately 2,100 mt of scallop yield (meat weight) in FY 2011 and 1,700 mt of scallop yield in FY 2012. It is expected these reductions will likely occur in open areas rather than access areas.

There may also be impacts on other stocks caught in the sea scallop and groundfish fisheries. For example, if sea scallop fishing activity is reduced because of yellowtail flounder incidental catches, catches of skates, monkfish, and other species caught by scallop fishermen may be reduced. Similar effects on a wider range of species may occur if the groundfish fishery loses effort as a result of allocating yellowtail flounder to the scallop fishery. Catches could be reduced of monkfish, skates, lobster, fluke, and other species caught by trawl fishermen.

7.1.2.2 Commercial Fishery Effort Control Modification

7.1.2.2.1 Option One – No Action

Under the No Action alternative, the effort control measures adopted by Amendment 16 would apply to common-pool groundfish fishing vessels – that is, those that do not join a sector. These measures were evaluated in Amendment 16 to meet the mortality targets of the amendment. The expected changes in exploitation for groundfish stocks are shown in Table 85.

Table 85 – Option 3A changes in exploitation (needed difference for pollock reflects impacts of changes to the Category B regular DAS program)

Spec	AREA	Needed Difference	Amendment 16 Impacts % Difference
COD	GBANK	-50%	-54%
COD	GM	-37%	-52%
HADDOCK	GBANK	202%	-53%
HADDOCK	GM	24%	-54%
WINTER	GBANK	48%	-52%
WINTER	GM		-45%
WINTER	SNEMA	-100%	-67%
PLAICE	ALL	39%	-56%
WITCH	ALL	-46%	-56%
WHK	ALL	28%	-63%
WINDOWPANE	NORTH		-59%
WINDOWPANE	SOUTH		-61%
YTF	CCGOM	-34%	-57%
YTF	GBANK	-15%	-59%
YTF	SNEMA	-39%	-39%
POLLOCK	ALL	-66%	-61%
REDFISH	ALL	271%	-62%

As discussed in Amendment 16, these expected impacts were estimated using an analytic tool referred to as the Closed Area Model (CAM). Because of uncertainty over sector membership, analyses in Amendment 16 assumed all permits remained in the common pool and would be subject to effort controls. Throughout the development of Amendment 16 it was clear that the development of effort controls was more uncertain than in the past because it was not known which vessels would choose to join sectors and which vessels would choose to fish under the effort controls. If the vessels that choose to fish in the common pool are not representative of the vessels in the model, then the model results might not accurately predict impacts. The ability to model the 24-hour clock added additional uncertainty. Concerns have been expressed that the model over-estimates the exploitation reductions, in particular for GOM cod and pollock. Another source of uncertainty is the estimate of cod discards. The Closed Area Model (CAM) parameters reflect revealed preferences based on catch rates in gear/block/month combinations. If catch rates in the model are lower than actual catch rates due to low estimates of discards, then some areas may be seen as less favorable within the model than is actually the case, and the model may over-estimate changes in exploitation. When the effort control alternative was developed there was a considerable buffer between the needed changes in exploitation for GOM cod and the model's predicted results, but this gap was essentially eliminated when the Council adopted the revised ABC control rules.

Based on sector rosters as of September 1, 2009, a large number of permits have been committed to sectors. These commitments can still be reversed until May 1, 2010, so sector membership is still not known with certainty. The permits that have not committed to sectors are described in Section 5.6.4. Given the trip limits adopted by Amendment 16 for GOM cod (2,000 lbs./DAS) and pollock (no trip limit), these permits have the potential to catch more GOM cod and pollock under effort controls than within sectors. There may be other permits that are presently committed to sectors that may be able to do the same. While the decision to join sectors does not hinge solely

on these two species, the possibility that other permit holders may elect to fish in the common pool adds uncertainty to the success of the effort control measures.

An example for GOM cod illustrates the potential issue should the No Action alternative be adopted. With 3,600 DAS in the common pool and a 2,000 lb./DAS trip limit, if the full trip limit is caught on every DAS the vessels that are not committed to sectors could land 3,266 mt of GOM cod. By comparison, the ACL for these same vessels is approximately 337 mt. While it is unrealistic to assume the trip limit will be caught on every DAS used, and that every DAS will be used, there remains a large difference between the ACL and the potential catch of these vessels. Should additional vessels choose to remain in the common pool, the potential catch increases, but so does the common-pool ACL.

To the extent fishing behavior changes in ways not predicted by the CAM and other analyses in Amendment 16, there may be less certainty about achieving the mortality objectives of Amendment 16 if the No Action alternative is selected.

7.1.2.2.2 Option Three – Modification to DAS Counting

This measure proposes to count common-pool vessel DAS at a 2:1 rate in the GOM differential DAS area at the beginning of the fishing year. This measure will reduce fishing effort by common pool vessels in this area. In recent years nearly 92 percent of GOM cod landings came from this area, so the measure would be expected to have the most impact on this stock. But it would also reduce fishing mortality from common pool vessels on other stocks caught from this area, including GOM haddock, pollock, plaice, CC/GOM yellowtail flounder, and GOM winter flounder.

With respect to the potential landings of GOM cod by vessels committed to sectors as of September 1, 2009, the maximum impact of this measure would occur if these vessels used all their DAS in the differential DAS area. Effectively this would reduce the potential landings in half, or to 1,633 mt if every baseline DAS is used. When combined with the proposed 800 lbs./DAS trip limit the results show a larger decline. If 3,600 baseline DAS are used, the potential landings are 653 mt. with the two combined measures. When carry-over DAS are incorporated into the analysis, and if only 65 percent of available DAS are used, then the potential landings are 546 mt.

Unlike a revised trip limit, this measure is not likely to lead to increased discards of GOM cod or pollock. One possible adverse impact could occur if common pool vessels shift fishing operations into other areas and fish on weaker stocks. This could occur either through the permit holders actually fishing in other areas or if they lease their DAS to vessels fishing in other areas. For example, if effort moves onto GB cod it could make it more difficult to reduce fishing mortality on that stock. There would be similar concerns if the effort shifted to SNE/MA yellowtail flounder.

7.2 Impacts to EFH

7.2.1 Impacts to EFH of the Proposed Action

7.2.1.1 ACL Specifications

7.2.1.1.1 Fishery Specifications and ACLs for FY 2010 – FY 2012

Under this option, ACLs are specified for FY 2010- 2012, a specific allocation of yellowtail flounder is made to the scallop and groundfish fisheries (a slight modification to non-selected Sub-Option One), and the U.S./Canada TACs are specified for FY 2010 (Sub-option Three). The Regional Administrator will establish the TAC for the CAI Hook Gear Haddock SAP in accordance with the Administrative Procedures Act. This will occur under either the Proposed Action or under the No Action alternative because this measure was adopted in an earlier action.

Habitat Impacts

The specification of ACLs is an administrative measure that is usually not expected to have direct impacts on essential fish habitat. The ACLs are consistent with the fishing mortality targets adopted by Amendment 16. These targets form the basis for the effort controls that apply to the common pool vessels and the amount of catch that can be taken by vessels that join sectors. Under the Proposed Action, the ACLs are set below the ABC. While this would have no impact on the common pool fleet in FY 2010 – because the effort controls do not change as a result of the ACL process – it reduces fishing opportunities for sector vessels when compared to the No Action alternative, since they are limited by a hard TAC. So indirectly, when compared to the No Action, this option could lead to a minor decrease in fishing effort and reduce the interactions of groundfish fishing gear with EFH. Since the common pool ACL would also be slightly lower, the differential DAS AM might allow slightly fewer fishing opportunities in FY 2011 if the ACL is exceeded. These impacts are speculative, however, as it is not entirely clear how the major management changes adopted by Amendment 16 will affect fishing operations.

Setting the CAI Hook Gear Haddock SAP is largely administrative and is not expected to result in any habitat impacts. The SAP itself, however, does provide opportunities for longline fishermen to target GB haddock and may increase the proportion of the haddock catch taken by fixed gear rather than mobile gear. No difference is expected between the Proposed Action and the No Action alternative as the measure is identical.

Sub-Option One adopts a specific allocation of yellowtail flounder for the scallop and groundfish fisheries. For FY 2010 there is a negligible difference between this option and No Action when considering the scallop fleet. The allocation is 100 percent of the amount they are expected to harvest, so there are not likely to be any differences in the amount of scallop fishing effort in this year. In FY 2011 and FY 2012, however, the allocation may reduce scallop effort if the scallop fleet is unable to reduce incidental catches and loses access as a result. Such differences are likely to be minor, and if the scallop fishery further reduces incidental catch rates they may not occur. It is also possible that the fishery may be forced to reduce effort in one area but will respond by

redirecting that effort to other areas. When compared to No Action, this option may indirectly reduce scallop fishing effort by a small amount and as a result slightly reduce the interaction of scallop dredge gear with EFH.

The same changes may take place in the groundfish fishery. For sector vessels, reduced access to yellowtail flounder may immediately constrain fishing activity and reduce fishing effort, while for common pool vessels the impacts may be delayed until an AM is triggered. In both cases the indirect impacts for EFH are likely to be positive but minor. This provision only affects a small portion of the groundfish fleet, and yellowtail flounder fishing usually does not occur on complex, sensitive habitats.

Sub-Option two adopts TACs for EGB cod and haddock, and GB yellowtail flounder, as required to implement the U.S./Canada Resource Sharing Understanding. While these TACs do not modify overall catches of these species by U.S. fishermen (because they are a subset of the overall ACL), they do limit fishing activity in the Eastern U.S./Canada area. The triggering of management measures to prevent the TAC for cod or haddock in the Eastern U.S./Canada Management Area from being exceeded could result in fishing effort being re-directed to yellowtail flounder in the Western U.S./Canada Area. If the yellowtail flounder TAC is reached first, the Eastern U.S./Canada Area would close, and possession of yellowtail flounder would be prohibited, but multispecies vessels could still continue to fish for various groundfish in the Western U.S./Canada Area. It is important to note that in addition to the habitat impacts that are related to changes in fishing effort associated with this action, other factors such as the type of habitat, its vulnerability to disturbance, the degree of natural disturbance, and the degree to which the habitat is already being impacted by bottom-tending mobile gear used in other fisheries, are also relevant. Benthic habitats in the U.S./Canada Management Area are impacted by fishing activities that are not affected by this management action, primarily scallop dredging. They are also exposed to natural disturbances caused by bottom currents and storms. Scallop dredging on eastern GB would continue even if the TAC for cod, yellowtail flounder, or haddock is reached. Trawlers utilizing monkfish DAS could also continue fishing in the area once it was closed to vessels using multispecies DAS. Adverse EFH impacts of all fishing activities managed by the New England Fishery Management Council were minimized to the extent practicable in management actions implemented in recent years.

The area that is potentially affected by the proposed TACs has been identified to include EFH for species managed under the following Fishery Management Plans: NE Multispecies; Atlantic Sea Scallop; Monkfish; Atlantic Herring; Summer Flounder, Scup and Black Sea Bass; Squid, Atlantic Mackerel, and Butterfish; Spiny Dogfish; Tilefish; Deep-Sea Red Crab; Atlantic Surfclam and Ocean Quahog; Atlantic Bluefish; Northeast Skates; and Atlantic Highly Migratory Species. This proposed action makes relatively minor adjustments in the context of the fishery as a whole, and, for the reasons stated above, is not expected to have any adverse impact on EFH. Furthermore, the proposed action does not allow for access to the existing habitat closed areas on GB that were implemented in Amendment 13 to the Multispecies FMP and Amendment 10 to the Scallop FMP and therefore it continues to minimize the adverse impacts of bottom trawling and dredging on EFH.

7.2.1.2 Commercial Fishery Effort Control Measures

7.2.1.2.1 Option Two – Trip Limit Modifications

This option adopts a 800 lb./DAS – 4,000 lb./trip limit for GOM cod, a 1,000 lb./DAS- 10,000 lb./trip limit for pollock, and requires limited access scallop vessels to land legal-sized yellowtail flounder. It also retains the trip limits for Handgear A permits at 300 lbs. cod and Handgear B permits at 75 lbs. cod.

Habitat Impacts

The adoption of reduced trip limits for GOM cod and pollock may alter the distribution of fishing effort by common pool vessels, particularly in the Gulf of Maine. Both stocks are caught widely throughout the area, though in recent years GOM cod catches have primarily been taken in inshore areas. The impacts of these changes in effort are difficult to predict. Both stocks can be caught over hard, complex bottom, so if effort is reduced in these areas it may provide some minor benefits to EFH. But without knowing how fishermen will change behavior these effects cannot be certain. When compared to No Action, it is doubtful that these reduced trip limits will have anything other than negligible impacts on EFH.

It is assumed the handgear used by Handgear A and B permit holders does not have habitat impacts, and thus the trip limit change is not expected to have any impacts on EFH as a result. There would not be any difference between the Proposed Action and No Action.

Requiring scallop vessels to land legal-size yellowtail flounder is not likely to have any impacts on EFH as compared to the No Action alternative. The scallop fishery has worked to reduce incidental catches of yellowtail flounder. Many of these efforts have been codified into the regulations – for example, the use of ten inch twine tops. Given these gear requirements, and the low value of yellowtail flounder relative to the high value of scallops, it is not likely that scallop vessels will modify fishing behavior as a result of this change. There are incentives to avoid yellowtail flounder, since catching too many yellowtail flounder may trigger AMs that restrict access to the far more valuable scallops. The distribution of scallop fishing activity is unlikely to be any different than that under the No Action alternative.

7.2.1.2.2 Option Four – Effort Control Measure Adjustments

This measure authorizes the regional Administrator to make changes to DAS counting or trip limits to either reduce the likelihood an ACL will be exceeded, or to facilitate harvesting an ACL.

Habitat Impacts

This measure is administrative in nature and is unlikely to have impacts on EFH. Specific applications of this measure by the Regional Administrator could change the distribution or amount of fishing effort, but any such changes would be designed to achieve Amendment 16 mortality targets and the resulting ACLs. As such, it should not have habitat impacts beyond those described in Amendment 16. As such it would not differ from No Action.

7.2.1.3 Summary of Essential Fish Habitat Impacts of the Proposed Action

Overall, the impacts on EFH from the Proposed Action are expected to be neutral relative to the No Action alternative.

Table 86 – Expected EFH Impacts of the Proposed Action Relative to the No Action Alternative

Proposed Measure	Expected Relative Habitat Impacts	Rationale
Specification of ACLs	0	Primarily administrative with no direct impacts on EFH; may lead to very minor positive impacts compared to No Action because catches will be less than those under No Action.
Allocation of yellowtail flounder to the scallop and groundfish fisheries	+/0	May result in slightly less scallop dredge effort in FY 2011 – 2012 as compared to No Action, and slightly lower groundfish fishing effort. No significant impacts on EFH expected.
Specification of US/Canada area TACs	0	Compared to No Action, possible minor shifts in location of groundfish fishing effort as a result of measures designed to keep catches below these TACs, but no adverse effects expected.
Trip Limit Modifications	0	Minor changes in distribution of common pool groundfish fishing effort possible, but uncertain habitat effects. No impacts from changes to handgear trip limits as gear has little impact on EFH. Scallop fishing effort unlikely to change as a result of requirement for limited access vessels to retain yellowtail flounder.
Effort Control Measure Adjustments	0	Administrative measure. Any use of this authority would be consistent with mortality targets of Amendment 16 and any impacts to EFH should be the same as those described in the amendment.

7.2.2 Impacts to EFH of Alternatives to the Proposed Action

7.2.2.1 ACL Specifications

7.2.2.1.1 Option One – No Action

Under this option, ACLs would not be specified for FY 2010- 2012, a specific allocation of yellowtail flounder would not be made to the scallop and groundfish fisheries, and the U.S./Canada TACs would not be specified for FY 2010.

Habitat Impacts

The specification of ACLs is an administrative measure that is usually not expected to have direct impacts on essential fish habitat. The ACLs are consistent with the fishing mortality targets adopted by Amendment 16. These targets form the basis for the effort controls that apply to the common pool vessels and the amount of catch that can be taken by vessels that join sectors. As the No Action alternative is defined, the ACLs would be set at the ABC level which would allow for slightly larger catches to be taken by the groundfish fishery. While this would have no impact on the common pool fleet in FY 2010 – because the effort controls do not change as a result of the ACL process – it would allow sector vessels more fishing opportunities, since they are limited by a hard TAC. So indirectly, when compared to the Proposed Action, this option could lead to a very minor increase in fishing effort and increase the interactions of groundfish fishing gear with EFH in FY 2010. Since the common pool ACL would also be slightly higher, the differential DAS AM might allow slightly more fishing opportunities in FY 2011 if the ACL is exceeded.

The No Action alternative also does not specify a specific allocation of yellowtail flounder for the groundfish and scallop fisheries. The No Action alternative, however, maintains the existing cap on the scallop fishery catches of yellowtail flounder in the CAI, CAII, and NLCA access areas. Without an overall cap on yellowtail flounder catches, scallop fishing activity would not be constrained by yellowtail flounder catches (but would continue to be limited by scallop management plan measures). When compared to the Proposed Action, this could lead to an increase in scallop fishing activity in FY 2011 and FY 2012 in the areas outside the CAI, CAII, and NLCA access areas, since fishing in these areas would still be limited by the cap. This might result in increased interactions between EFH and scallop dredge activity, but ultimately these interactions would be consistent with the analysis of impacts in the scallop management actions.

If U.S./Canada TACs are not specified, there may be changes in the distribution of fishing activity on GB. In recent years the TACs have occasionally restricted access to the Eastern U.S./Canada area; without the TACs, these restrictions would not be implemented and as a result there may be more fishing effort in the eastern area. It is not clear whether catch rates in the eastern area would be higher than in the western area, leading to more fish being caught with less effort.

The CAI Hook Gear Haddock SAP TACs would be the same under No Action as in the Proposed Action. This measure is largely administrative in nature and no impacts on EFH are anticipated.

Overall, the indirect impacts of this No Action alternative are expected to be minor, and may be negative.

7.2.2.1.2 Option Two - Fishery Specifications and ACLs for FY 2010 – FY 2012

This option differs slightly from the Proposed Action in that GB and SNE/MA yellowtail flounder allocated to the scallop fishery in FY 2010 is 90 percent of the amount expected to be caught, rather than 100 percent. Because this value does not trigger a specific AM in FY 2010 and is only marginally smaller than that proposed, the habitat impacts of this option would be expected to be indistinguishable from those described for the Proposed Action (see section 6.2.1.1.1).

7.2.2.2 Commercial Fishery Effort Control Measures

7.2.2.2.1 Option One – No Action

Under this option, the effort control measures that are proposed in Amendment 16 would remain in effect and would not be changed. The impacts on EFH are described in that action. No changes would be expected.

7.2.2.2.2 Option Three - Modification to DAS Counting

This option proposed to adopt differential DAS counting at the rate of 2:1 for an area in the inshore GOM in order to reduce catches of GOM cod and pollock by vessels that do not join sectors.

Habitat Impacts

In general, reductions in DAS reduce groundfish fishing and thus reduce potential adverse effects of fishing on EFH. The impacts of differential DAS counting may not be as clear. Imposing this rate in the inshore GOM area may reduce effort in that area, but the effort could shift into other areas as a result. The ability of vessels to do this are limited to some extent by the fact that the boats that fish in the inshore GOM tend to be smaller vessels that typically take one or two day trips; their ability to fish in offshore areas is limited. These vessels also are most familiar with targeting species found in the inshore GOM, such as GOM cod and pollock, so moving to other inshore areas where these species are not frequently found may not be attractive to them. A second factor limiting the potential benefits to habitat of this measure is that it only applies to vessels that choose to remain in the common pool; based on September 1, 2009 sector rosters, this is likely to be only a small number of active fishing vessels. Overall, this measure may have provided minor, positive impacts for habitat in the inshore GOM area.

7.3 Impacts on Endangered and Other Protected Species

7.3.1 Impacts on Endangered and Other Protected Species of the Proposed Action

7.3.1.1 ACL Specifications

7.3.1.1.1 Fishery Specifications and ACLs for FY 2010-2012

Under this option, ACLs are specified for FY 2010- 2012, a specific allocation of yellowtail flounder is made to the scallop and groundfish fisheries (a slight modification to non-selected Sub-Option One), and the U.S./Canada TACs are specified for FY 2010 (Sub-option Three). The Regional Administrator will establish the TAC for the CAI Hook Gear Haddock SAP in accordance with the Administrative Procedures Act. This will occur under either the Proposed Action or under the No Action alternative because this measure was adopted in an earlier action.

Impacts to Protected Species

ACL specifications are largely administrative measures and are therefore not expected to have direct impacts on protected species. The ACLs in the Proposed Action are consistent with the fishing mortality targets adopted by Amendment 16. These targets were used to determine the effort controls that apply to the common pool vessels and the overall catch that can be harvested by sector vessels. Under the Proposed Action, the ACLs are set below the ABC. While this would have no impact on the common pool fleet in FY 2010 – because the effort controls do not change as a result of the ACL process – it reduces fishing opportunities for sector vessels when compared to the No Action alternative, since they are limited by a hard TAC. Indirectly, when compared to the No Action, this option could lead to a minor decrease in fishing effort and create a benefit for protected species by reducing their interactions with groundfish fishing gear. Since the common pool ACL would also be slightly lower, the differential DAS AM might be triggered if the ACL is exceeded and allow slightly less fishing opportunities in FY 2011. These impacts are speculative, however, as it is not entirely clear how the major management changes adopted by Amendment 16 will affect fishing operations.

Setting the CAI Hook Gear Haddock SAP is largely administrative and is not expected to result in any protected species impacts. The SAP itself, however, does provide opportunities for longline fishermen to target GB haddock and may increase the proportion of the haddock catch taken by fixed gear rather than mobile gear. Although hook gear has been known to interact with sea turtles, Amendment 16 points out that the timing and location of the CAI make it unlikely that sea turtle interaction would increase. Similarly, right whale critical habitat does fall in the area, however hook gear has not been implicated in entanglements. No difference is therefore expected between the Proposed Action and the No Action alternative.

Sub-Option One adopts a specific allocation of yellowtail flounder for the scallop and groundfish fisheries. For FY 2010 there is a negligible difference between this option and No Action when considering the scallop fleet. The allocation is 100 percent of the amount they are expected to harvest, so there are not likely to be any differences in the amount of scallop fishing effort in this year. This would likely mean that the impact to protected species would be negligible. In FY 2011 and FY 2012, however, the allocation may reduce scallop effort if the scallop fleet is unable to reduce incidental catches and loses access as a result. Such differences are likely to be minor, and if the scallop fishery further reduces incidental catch rates they may not occur. It is also possible that the fishery may be forced to reduce effort in one area but will respond by redirecting that effort to other areas. When compared to No Action, this option may indirectly reduce scallop fishing effort by a small amount and as a result slightly reduce the interaction of scallop dredge gear with protected species. More specifically, scallop dredges have been known to interact largely with sea turtles, therefore sea turtles are most likely to benefit from this action.

The same changes may take place in the groundfish fishery. For sector vessels, reduced access to yellowtail flounder may immediately constrain fishing activity and reduce fishing effort, while for common pool vessels the impacts may be delayed until an AM is triggered. In both cases the indirect impacts for protected species are likely to be positive but minor, as the possibility of interaction with the fishery decreases. This provision only affects a small portion of the groundfish fleet however the benefits have the possibility of being felt by a range of protected species.

Sub-Option two adopts TACs for EGB cod and haddock, and GB yellowtail flounder, as required to implement the U.S./Canada Resource Sharing Understanding. While these TACs do not

modify overall catches of these species by U.S. fishermen (because they are a subset of the overall ACL), they do limit fishing activity in the Eastern U.S./Canada area. The triggering of management measures to prevent the TAC for cod or haddock in the Eastern U.S./Canada Management Area from being exceeded could result in fishing effort being re-directed to yellowtail flounder in the Western U.S./Canada Area. If the yellowtail flounder TAC is reached first, the Eastern U.S./Canada Area would close, and possession of yellowtail flounder would be prohibited, but multispecies vessels could still continue to fish for various groundfish in the Western U.S./Canada Area. The uncertainty associated with these shifts in effort, however, makes it difficult to calculate the amount of impact that the Option may have on protected species, from impacts such as forage availability to encounters with fishing vessels. It is therefore unknown at this time. Consequently, while management overall has been viewed as a benefit to protected resources inhabiting the management area, the impact of the Option cannot be predicted at this time. That being said, any specifications which limit effort have the potential to benefit protected species in some way.

This proposed action makes relatively minor adjustments in the context of the fishery as a whole. As the industry adapts to additional restrictions in effort on some species, and increased opportunity to fish for others, the pattern of effort will determine the fisheries' interaction with protected species relative to its current level. The impact of the proposed measures on protected species are difficult to predict with great precision because it is unclear how fishermen will adapt to new restrictions on some activities and increased opportunities in other areas. Overall interactions with protected species are not expected to change drastically, and the impact of this measure will be minimal.

7.3.1.2 Commercial Fishery Effort Control Modifications

7.3.1.2.1 Option Two – Trip Limit Modifications

This option adopts a 800 lb./DAS – 4,000 lb./trip limit for GOM cod, a 1,000 lb./DAS- 10,000 lb./trip limit for pollock, and requires limited access scallop vessels to land legal-sized yellowtail flounder. It also retains the trip limits for Handgear A permits at 300 lbs. cod and Handgear B permits at 75 lbs. cod.

Impacts to Protected Species

The option, in general decreases the number of pounds caught, and as such has ability to alter interactions with protected species. Although minor changes in the impact are likely, the changes will most likely be beneficial. With less pounds to be caught, nets, and handlines will be in the water less, decreasing the chance of interaction with protected species. The adoption of reduced trip limits for GOM cod and pollock, however, may alter the distribution of fishing effort by common pool vessels, particularly in the Gulf of Maine. Both stocks are caught widely throughout the area, though in recent years GOM cod catches have primarily been taken in inshore areas. The impacts of these changes in effort are difficult to predict. As such, the magnitude and direction of the impact of this proposal compared to the No Action alternative cannot be predicted at this time.

Requiring scallop vessels to land legal-size yellowtail flounder is not likely to have any impacts on protected as compared to the No Action alternative. Given these gear requirements, and the low value of yellowtail flounder relative to the high value of scallops, it is not likely that scallop vessels will modify fishing behavior as a result of this change. This will most likely mean that interaction with protected species will be minimized. The distribution of scallop fishing activity is

unlikely to be any different than that under the No Action alternative, also lessening the probability of protected species encounters.

7.3.1.2.2 Option Four – Effort Control Measures Adjustments

This measure authorizes the regional Administrator to make changes to DAS counting or trip limits to either reduce the likelihood an ACL will be exceeded, or to facilitate harvesting an ACL.

Impact to Protected Species

This measure is administrative in nature and is unlikely to have impacts on the protected species. Specific applications of this measure by the Regional Administrator could change the distribution or amount of fishing effort, but any such changes would be designed to achieve Amendment 16 mortality targets and the resulting ACLs. If the Regional Administrator were to implement DAS counting changes or trip limits in the middle of the fishing season, the reduced amount of time and allocation to fish create a derby-like situation, in which fishermen compete to get what quota they can in the small time allotted. The magnitude of this impact, as well as the individual protected species that might be affected will depend on the number of vessels affected by these rules, i.e. those that do not elect to participate in a sector program, and on where, when, and with what type of gear those vessels fish. That number cannot be predicted at this time.

7.3.1.3 Summary of Protected Resources Impacts

The impacts of the Proposed Action to protected species, in comparison with the No Action alternative, are predicted to be neutral overall.

Table 87 – Expected Protected Species Impacts of the Proposed Action Relative to the No Action Alternative

Proposed Measure	Expected Relative Protected Species Impacts	Rationale
Specification of ACLs	0	Administrative measure – has no direct impacts on protected species; very slight positive impacts possible compared with No Action due to smaller catches.
Allocation of yellowtail flounder to the scallop and groundfish fisheries	+/0	Could lead to slightly lower effort from scallop dredges and groundfish fleet in FY 2011 – 2012 than No Action alternative, providing minor potential benefit to protected species.
Specification of US/Canada area TACs	0	No direct adverse effects anticipated compared to No Action, although groundfish fishing effort may experience minor shifts in location as a result of measures designed to keep catches below these TACs.
Trip Limit Modifications	0	Possible that distribution of common pool groundfish fishing effort may shift slightly, but protected species impacts projected to be minimal. Handgear trip limits will have no effect, as gear has little impact on protected species. Yellowtail flounder landing requirement unlikely to change scallop fishing effort, therefore no anticipated effects.
Effort Control Measure Adjustments	0	Administrative measure: effects unknown. Authority would be used in keeping with Amendment 16 mortality targets, so any impacts to protected species should be as described in the amendment.

7.3.2 Impacts on Endangered and Other Protected Species of Alternatives to the Proposed Action

7.3.2.1 ACL Specifications

7.3.2.1.1 Option One – No Action

Under this option, ACLs would not be specified for FY 2010- 2012, a specific allocation of yellowtail flounder would not be made to the scallop and groundfish fisheries, and the U.S./Canada TACs would not be specified for FY 2010.

Impacts to Protected Species

The specification of ACLs is an administrative measure that is usually not expected to have direct impacts on protected species. The ACLs are consistent with the fishing mortality targets adopted by Amendment 16. These targets form the basis for the effort controls that apply to the common pool vessels and the amount of catch that can be taken by vessels that join sectors. As the No Action alternative is defined, the ACLs would be set at the ABC level which would allow for slightly larger catches to be taken by the groundfish fishery. While this would have no impact on the common pool fleet in FY 2010 – because the effort controls do not change as a result of the ACL process – it would allow sector vessels more fishing opportunities, since they are limited by a hard TAC. So indirectly, when compared to the Proposed Action, this option could lead to a very minor increase in fishing effort and thereby increasing the chance that protected species may interact with the fishing fleet. Since the common pool ACL would also be slightly higher, the differential DAS AM might allow slightly more fishing opportunities in FY 2011 if the ACL is exceeded, which may increase the impact to protected species.

The No Action alternative also does not specify a specific allocation of yellowtail flounder for the groundfish and scallop fisheries. The No Action alternative, however, maintains the existing cap on the scallop fishery catches of yellowtail flounder in the CAI, CAII, and NLCA access areas. Without an overall cap on yellowtail flounder catches, scallop fishing activity would not be constrained by yellowtail flounder catches. When compared to the Proposed Action, this could lead to an increase in scallop fishing activity in FY 2011 and FY 2012 in the areas outside the CAI, CAII, and NLCA access areas, since fishing in these areas would still be limited by the cap. The impact may be therefore be slightly stronger and negative on both sea turtles, as they are most likely to interact with scallop dredges, but such an outcome is uncertain and unpredictable at this time.

If U.S./Canada TACs are not specified, there may be changes in the distribution of fishing activity on GB. In recent years the TACs have occasionally restricted access to the Eastern U.S./Canada area; without the TACs, these restrictions would not be implemented and as a result there may be more fishing effort in the eastern area. It is not clear whether catch rates in the eastern area would be higher than in the western area, leading to more fish being caught with less effort. Such an increase in the East may effect the chance of interactions of protected species with the fishing fleet, more specifically species such as harbor porpoise and right whale. The impact of the change in distribution on protected species, however, depends on the gear used and the time and area in which the fishery occurs relative to the presence/absence of protected species, which cannot be predicted with any certainty at this time.

The CAI Hook Gear Haddock SAP TACs would be the same under No Action as in the Proposed Action. This measure is largely administrative in nature and no impacts on protected species are anticipated.

Overall, the indirect impacts of this No Action alternative are expected to be minor, and may be slightly negative, although in all cases there is a high degree of uncertainty around the negative predictions.

7.3.2.1.2 Sub-option One –Yellowtail Flounder Allocations for the Scallop Fishery –
Groundfish Committee Recommendation

This option differs slightly from the Proposed Action in that GB and SNE/MA yellowtail flounder allocated to the scallop fishery in FY 2010 is 90 percent of the amount expected to be

caught, rather than 100 percent. Because this value does not trigger a specific AM in FY 2010 and is only marginally smaller than that proposed, the protected species impacts of this option would be expected to be indistinguishable from those described for the Proposed Action (see section 6.3.1.1.1).

7.3.2.2 Commercial Fishery Effort Control Modifications

7.3.2.2.1 Option One – No Action

Under this option, the effort control measures that are proposed in Amendment 16 would remain in effect and would not be changed. The impacts on protected species are described in that action. No changes would be expected.

7.3.2.2.2 Option Three – Modification to DAS Counting

This option proposed to adopt differential DAS counting at the rate of 2:1 for an area in the inshore GOM in order to reduce catches of GOM cod and pollock by vessels that do not join sectors.

Impacts to Protected Species

Overall the reductions in DAS reduce groundfish fishing and, by extension, the impact on protected species could be positive, as the chance of interaction with the fishery could decrease. There could be some drawbacks to this option, however. On one hand the effort could shift into other areas as a result of the option, more specifically out of the differential counting areas in the inshore GOM to elsewhere. If the elsewhere is to the offshore GOM then this increase in the rate of effort would potentially result in an increase in the rate of encounter with protected species, particularly for the harbor porpoise, grey and harbor seals which are seasonally abundant in the GOM. On the other hand, the ability of vessels to do this are limited to some extent by the fact that the boats that fish in the inshore GOM tend to be smaller vessels that typically take one or two day trips; their ability to fish in offshore areas is limited. If the vessels stay in the area they are likely to affect the aforementioned species in the same way, although due to the DAS reduction the impact could be less.

A second factor limiting the potential benefits to protected species of this measure is that it only applies to vessels that choose to remain in the common pool; based on September 1, 2009 sector rosters, this is likely to be only a small number of active fishing vessels. Overall, this measure may or may not effect protected species in the inshore GOM area, depending on how fishing behavior changes as a result; such changes at this time are unpredictable. The overall reduction does have the potential to be beneficial to protected species, however.

7.4 Economic Impacts

7.4.1 Economic Impacts of the Proposed Action

7.4.1.1 ACL Specifications

7.4.1.1.1 Option Two – Fishery Specifications and ACLs for FY 2010 – 2012

There are three elements to this option which may have economic impacts. The first is the setting of ACLs, the second is the allocation of yellowtail flounder to the scallop and groundfish fisheries, and the third is the specification of TACs for the U.S./Canada area.

Amendment 16 noted that the economic impacts of the ACL setting process introduce substantial transaction costs into groundfish management. These include the costs of the administrative process for setting and monitoring the ACLs and implementing AMs should the ACLs be exceeded. In addition, the amendment noted that setting an ACL below the ABC imposes opportunity costs on the fishery. With the specification of numeric values for the different allocations, it is possible to develop a rough estimate of the revenues available from groundfish harvests using recent average prices. These estimates can be further divided into the various components of the fishery. While future prices may change, this at least provides a way to evaluate the potential fishery revenues under the ACLs and to compare these revenues to those if catches were at the ABC rather than the ACL and this gives a sense of the opportunity costs of management uncertainty. These analyses should be viewed with caution: it is not clear that the groundfish fishery will be able to harvest all ACLs, as is assumed below. Indeed, recent experience suggests the opposite. Neither of the two original sectors have ever harvested their full allocation of GB cod; the combined common pool and sector vessels have never harvested the available GB haddock or redfish; and catches of many other stocks have been less than the target TACs in recent years. In addition to examining the potential revenues if the entire ACL is harvested, the following attempts to capture the upper and lower bound of potential revenue.

For purposes of analysis estimated potential revenue was limited to the commercial component of ABCs and ACLs that would be allocated to the combined common pool and sectors. With few exceptions these values account for more than 95% of total groundfish revenue. Using average FY 2007 and 2008 prices and assuming the entire commercial ACL is landed, the potential revenues from the proposed ACLs are \$198.5 million in FY 2010, increase to \$216.5 million in FY 2011, and decline to \$206.8 million in FY 2012 (Table 88). These revenues are highly dependent on landings of GB haddock, which account for more than half the total revenues and is the reason why estimated potential revenues decline in 2012 as the contribution of the 2003 year to fishing revenue is diminishing. As discussed in section 3.1.1, the ABCs for GB cod and GB haddock assume no Canadian catch in 2011 and 2012, so these estimates are biased high, but are believed to fall within the range expected impacts.

For purposes of comparison the potential revenues associated with the commercial ACL a commercial ABC was computed by netting out recreational, state waters, and other catch components. Assuming 100% of this commercial ABC is landed results in an additional \$11 million of groundfish revenue in each year compared to the commercial ACL. This is a rough approximation of the opportunity cost of management uncertainty and provides some guidance on the value of investing in improving catch monitoring.

As noted above it is unlikely that the entire ACL will be harvested particularly for GB haddock due to its large stock size and also because of discarding. It is more realistic to assume GB haddock landings may increase from current levels, but the entire ACL will not be harvested since the ACL is several times larger than any recent landings amount. Approximation of potential revenues is complicated by the fact that vessel owners fishing in sectors formed under Amendment 16 may be expected to have an incentive to fish in a more selective manner than may have been the case in the past. This effect was approximated first by calculating the average

underage for each stock during FY 2007-2008 and assuming that any stock where at least 75% of the TTAC for FY 2007 or FY 2008 was taken would be fully landed. For all other stocks the average percentage of the TTAC was assumed to remain unchanged. A second scenario was developed in which the percentage of the TTAC for stocks in the latter category was increased by 50%. For example, GB haddock catch averaged only 17% of the TTAC during FY 2007-2008. In this second scenario the percentage of the TAC landed was assumed to increase to 25.5% of the GB Haddock ACL. Other stocks where the percent of the ACL assumed to be taken was increased include GB cod, CC/GOM yellowtail, witch flounder, American plaice, Acadian redfish, and GOM haddock.

Applying the FY 2007-2008 average underage (i.e. the percent below the TTACs set during FY 2007-2008) to the FY 2010 ACL results in estimated groundfish revenue of \$68.4 million, an increase to \$75.0 million in 2011 and \$76.6 million in 2012. Adjusting these values to account for potential discarding (based on FY 2007-2008 averages), results in a potential reduction in groundfish revenue of approximately \$6 million per year to \$63 million in 2010, \$69.2 million in 2012, and \$70.2 million in 2012. With exemptions from trip limits provided to each sector the discard rates experienced during FY 2007 and 2008 may not be realized. Assuming a 50% increase in TAC utilization results in estimated potential groundfish revenues of \$87.2 million in FY2010, \$96.1 million in 2011, and \$97.4 million in 2012. Compared to nominal groundfish revenues during FY 2007 and FY 2008 of close to \$85 million this second scenario demonstrates that a change in selectivity or fishing practices could allow sector participants to achieve and even surpass recent levels of groundfish revenues.

Note that 100% of the ABC represents the revenues from the No Action alternative. The Proposed Action returns lower revenues when compared to No Action.

Table 88 – Potential commercial groundfish revenues (\$1,000,000) assuming entire ABC or ACL catch is landed and for different assumed TAC underage and discarding

	100% of ABC	100% of ACL	2007-2008 Average Underage	2007-2008 Underage and Discarding	2007-2008 Underage Reduced by 50%
2010	198.5	189.1	68.4	63.0	87.2
2011	216.5	205.3	75.0	69.2	96.1
2012	206.8	196.0	76.6	70.2	97.4

The proposed CAI Hook Gear Haddock SAP TACs will be established under either the Proposed Action or the No Action alternative because the regulation specifying calculation of the TACs was adopted by an earlier management action. As a result, there is no difference between the No Action alternative and the Proposed Action alternative.

The specification of TACs for the CAI Hook Gear Haddock SAP provides additional opportunities for both common pool and sector vessels using longlines to access GB haddock. The recent three-year average price (CY 2006 – 2008) for GB haddock was \$1.31/lb. live weight; using this price the potential ex-vessel revenues from this SAP are \$12.2 million in FY 2010 and decline to \$7.4 million in FY 2012. In recent years only a fraction of the available TAC has been caught, however, so the potential revenues may not be realized. Catches have remained relatively

constant at roughly 400,000 lbs. (181 mt) or less since 2005. Even after the SAP season and area were expanded in 2009 catches did not increase significantly.

7.4.1.1.1 Proposed Action – Yellowtail Flounder Allocation to Scallop Fishery

The allocation of yellowtail flounder between the scallop and groundfish fisheries may affect the fishing opportunities of the respective fleets. Determining the exact impact of the allocations is difficult because of the different management measures between the two fisheries. In particular, the AMs that apply to the fisheries shape the extent of the impacts. The Proposed Action bases the allocation to the scallop fleet of GB and SNE/MA yellowtail flounder on an estimate of the amount the fishery is expected to catch if it harvests its entire scallop yield. In FY 2010, the scallop fishery is assumed to harvest 100 percent of this estimated amount. In FY 2011 and FY 2012 the fishery is allocated 90 percent of this amount. No specific allocation is made for CC/GOM yellowtail flounder as the estimated scallop fishery catches are small enough to be included as part of the “other sub-component” allowance.

Elements of the groundfish fishery actively target yellowtail flounder, particularly in the GB stock area. The species is also caught while fishing for other stocks, particularly other flatfish. Under sector provisions, sector vessels can only fish in a stock area with gear that catches yellowtail flounder if they have Annual Catch Entitlement (ACE) remaining. Since sectors are subject to hard TACs, reducing the amount of yellowtail flounder available to the sectors may limit their opportunities to fish for other species. For vessels in the common pool the issue is more complex. Because common pool vessels are governed by effort controls and a differential DAS AM in FY 2010 and FY 2011, a reduction in yellowtail flounder available to this component does not necessarily result in an immediate loss of opportunities; but exceeding an ACL in the first year triggers the AM in the second year, so ultimately fishing opportunities are affected. In the U.S./Canada area the impacts are more immediate since the catch of GB yellowtail flounder is controlled by a hard TAC and by in-season AMs such as changes in trip limits, gear requirements, and the loss of access to the Eastern U.S./Canada area. Beginning in FY 2012 with the adoption of the hard TAC AM for common pool vessels, any change in yellowtail flounder allocations has immediate impacts on the common pool fleet.

For the scallop fishery, yellowtail flounder is an important incidental catch species. Since 2004, scallop fishery catches of yellowtail flounder have not showed clear trends even while yellowtail stocks rebuild (Table 89). As a portion of the total catch, their percentage has increased as the restrictions on the groundfish fleet reduced overall harvest. To date, the only limits on yellowtail flounder catch applicable to this fishery have been on the amount that can be harvested from within the CAI, CAII, and NLCA closed area access programs. Regulatory requirements establish this limit as 10 percent of the target TAC/ACL for the GB or SNE/MA stocks. The scallop management measures, however, compensate scallop vessel with trips in open areas if an access area is closed due to yellowtail flounder catches. With the adoption of an allocation and AMs applicable to the scallop fishery the possibility exists that the amount of yellowtail flounder available to this fishery could limit access to scallops in all areas. In FY 2010, this allocation is treated as an “other sub-component” of the yellowtail flounder ACL and there are no scallop fishery AMs should it be exceeded. In FY 2011 and beyond, there will be AMs for the scallop fishery. The exact nature of those AMs is still under development and it is not clear how they will impact scallop vessels.

The relative value of yellowtail flounder to the two fisheries was calculated, but the characterization of this value as a loss or gain to either fishery is complicated by the different management measures just described. For the scallop fishery, future discard rates were calculated based on past observed discard rates in open and access areas and future changes in yellowtail flounder and scallop biomass. These rates were applied to the expected scallop yield under four different scallop management scenarios to estimate the yellowtail flounder the fishery would be expected to harvest absent other limits. This “expected” or “needed” yellowtail flounder was then reduced by ten percent in FY 2011 and FY 2012 as proposed by this action. The entire reduction was assumed to be taken from open areas, and open area catch was reduced accordingly. The differences in revenues were then calculated between the expected yellowtail flounder catch and the reduced yellowtail flounder catch. While initially the calculations were done for four different scallop management scenarios, the Council selected a specific scenario prior to making this yellowtail flounder decision and only the results for that scenario are shown below.

The results of these calculations are shown in Table 100 through Table 104. Each metric ton of yellowtail flounder is more valuable to the scallop fishery in areas with lower discard rates because more scallops are landed for each metric ton allocated. Because of higher discard rates on GB – particularly in the CAII access area – the lowest values of yellowtail flounder are in this area. Overall, allocating 90 percent of the expected yellowtail flounder catch in GB and SNE/MA may reduce scallop vessels revenues by \$35 to \$36 million for FY 2011 – FY 2012 when compared to No Action (where revenues are not limited by an overall yellowtail flounder cap). This ranges from 6% to 7% of forecast scallop revenues. In FY 2010 there aren’t expected to be any revenue changes realized by the scallop fishery since there is no specific allocation and no specific measures that limit overall scallop fishing if the yellowtail flounder allocation is exceeded. The Council may consider a measure in Scallop Amendment 15 that adjusts FY 2011 or FY 2012 allocations if the scallop fishery exceeds the amount estimated for FY 2010, but that measure has not yet been designed.

A similar analysis was performed for the groundfish fishery for the GB and SNE/MA yellowtail flounder stocks. In both stocks areas two calculations were developed. The first is a straightforward estimate of the value of each metric ton of yellowtail flounder based on 2007 and 2008 data. The second calculation determined the total value of all species landed on groundfish trips in the area, and then determined the value of this total per metric ton of yellowtail flounder landed. This high value is most appropriate for those vessels in sectors, or for FY 2012 when the hard TAC AM affects common pool vessels, since it shows the loss of all revenue if yellowtail flounder leads to a complete loss of access to a stock area. On Georges Bank this was further refined for common pool vessels by taking into account discard rates and the different management measures in the Eastern and Western U.S./Canada areas. Since the Eastern Area closes if the yellowtail flounder TAC is exceeded, all revenues were sacrificed from this area, while fishing continues in the Western Area. This provides a third, or expected, value per metric ton. In the SNE/MA area, only trips that landed yellowtail flounder were considered in the analysis. These values were multiplied by the allocations under consideration to determine the revenue reductions for the groundfish fishery under the proposed allocation and the three scallop management scenarios under consideration.

Results are summarized in Table 105 and Table 106. The value of each metric ton of yellowtail flounder to the groundfish fishery ranges from a low of \$3,296 to a high of \$41,176. GB yellowtail flounder is more valuable than SNE/MA yellowtail flounder because of the increased groundfish fishing opportunities on GB. The total losses to the fishery range from a low of \$326,000 to a high of \$13 million over the next three years. To put these values in context, FY

2005 to FY 2007 groundfish revenues averaged \$101 million and total revenues on groundfish trips averaged \$158 million (see NEFMC 2009), but Amendment 16 may reduce groundfish revenues by 15% and total revenues by 18%. The changes estimated here thus fall in the range of less than one percent to 15.3% of groundfish revenues, and less than one percent to 10% of total revenues on groundfish trips.

All of these estimates assume no changes in fishing behavior by either fishery. In both cases changes in fishing practices could mitigate potential revenue losses. For example, if the ratio of yellowtail flounder caught to scallops landed can be decreased through either gear modifications or fishing practices, then the scallop fishery will harvest more of its available yield prior to triggering any AMs that may be adopted for FY 2011 and beyond. If the groundfish fishery can do the same – reducing the yellowtail flounder caught while fishing for other species – the same result can be expected and revenue losses would not be as large as estimated here. There is evidence in observed groundfish fishing trips that this may be possible, at least for roundfish species.

Compared to the No Action alternative, this measure is likely to reduce scallop fishery revenues. Under No Action, no specific allocation is made to the scallop fishery and thus the scallop yield should approach that estimated for the adopted scallop management scenario. For the groundfish fishery the differences between this option and No Action are less certain. If an allocation is not made to the scallop fishery, then the overall yellowtail ACL would serve as the trigger for groundfish AMs. Since the scallop fishery presumably would still catch yellowtail flounder without any limit, it is possible that excessive yellowtail flounder catches would result in groundfish AMs and lost fishing opportunities for this fleet.

ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS
Economic Impacts

Table 89 – Scallop fishery yellowtail flounder catches, CY 2004-2008

Fishing Year		2004	2005	2006	2007	2008
CC/GOM	Total TAC	881	1233	650	1078	1406
	Total TAC for scallop fishery*	86.3	120.8	63.7	105.	137.
	Scallop AA open or closed	N/A	N/A	N/A	N/A	N/A
	Total YT catch by dredge gear (landings and discards)	18	6	12	35	5
	Total YT Catch (all gear)	1186	997	620	627	727
	Scallop catch as percent of total catch	1.5%	0.6%	1.9%	5.6%	0.7%
SNE	Total TAC	707	1982	146	213	312
	Total TAC for scallop fishery*	69	194	14	21	31
	Scallop AA open or closed	open	closed	open	open	open
	Total YT catch by dredge gear (landings and discards)	125	130	168	188	151
	Total YT Catch (all gear)	614	367	369	396	504
	Scallop catch as percent of total catch	20.3%	35.4%	45.5%	47.5%	29.9%
GB	Total TAC	6000	4260	2070	900	1869
	Total TAC for scallop fishery*	588	417	203	88	183
	Scallop AA open or closed	open	open	open	open	closed
	Total YT catch by dredge gear (landings and discards)	84	194	254	122	134
	Total YT Catch (all gear, U.S. only)	6386	3637	1573	1564	1118
	Scallop catch as percent of total catch	1.3%	5.3%	16.1%	7.8%	12.0%

Table 90 – Summary of YT needed by scallop fishery in 2010-2012 in MT and % of total YT ABC

		total YT needed (mt)			% YT needed		
No Closure - F=0.20		2010	2011	2012	2010	2011	2012
	CC	30	26	32	3.40%	2.40%	2.80%
	GB	110	226	353	9.2%	20.9%	28.8%
	SNE	111	96	151	22.5%	14.0%	15.0%

Table 91 – Yellowtail flounder allocated to the scallop fishery under the Proposed Action. Not reduced for management uncertainty. Note the action does not make a specific allocation for CC/GOM yellowtail flounder.

	YTF Allocated, By Stock Area and Scallop Management Scenario		
	CC	GB	SNEMA
NC, F=0.2			
2010	30	110	111
2011	23.4	203.4	85.5
2012	28.8	317.7	135

Table 92 – Change in scallop fishery revenues per mt of yellowtail flounder allocated, by year, YTF stock area and scallop management scenarios. Assumes allocation is 90 percent of expected harvest.

Year/ Scenario	Change in Revenue/mt YTF, Dollars			Change as Percent of Revenues from YTF Stock Area		
	CC	GB	SNE/MA	CC	GB	SNEMA
NC, F=0.2						
2010						
2011	\$3,500,027	\$116,969	\$3,544,078	3.8%	0.2%	1.3%
2012	\$3,809,121	\$271,570	\$1,778,705	3.1%	0.3%	0.7%

Table 93 – Change in scallop revenues if YTF allocation is 90 percent of amount expected to be harvested for GB and SNE/MA stocks, and no specific allocation for CC/GOM YTF stock

Scallop Scenario	Year		
	2010	2011	2012
NCF=.2		\$35,030,399	\$36,266,973
As Percent of Total Scallop Revenues			
NCF=.2		7%	6%

Table 94 – Change in revenues on groundfish trips per mt of YTF; average of 2007 and 2008. For GB, expected revenues consider difference in management measures for common pool vessels between EGB and WGB.

	GB	SNE/MA
YTF Revenues/mt	\$3,296	\$3,895
Total Revenues/mt	\$41,176	\$28,708
Expected Revenues/mt	\$12,674	

Table 95 – Reduction in groundfish revenues if scallop fishery is allocated 90 percent of expected harvest of YTF for GB and SNE/MA YTF stock areas. These values represent the difference between potential groundfish revenues if there is no scallop fishery catch of yellowtail flounder and the proposed allocation. Based on 2007/2008 revenues.

	Georges Bank			SNE/MA	
	Low	High	Expected	Low	High
NC, F=0.2					
2010	\$326,304	\$4,076,424	\$1,254,726	\$389,111	\$2,867,929
2011	\$670,406	\$8,375,198	\$2,577,892	\$333,023	\$2,454,534
2012	\$1,047,139	\$13,081,615	\$4,026,530	\$525,825	\$3,875,580

7.4.1.1.1.2 Sub-option 2 – U.S./Canada Resource Sharing Understanding TACs

The economic impacts that result from the use of hard TACs for the shared stocks of GB stocks can best be described in terms of five different effects: 1) Hard TACs for cod, haddock, and yellowtail flounder will limit the total amount of catch of these stocks (landings and discards) allowed by law; 2) Associated rules such as gear restrictions, trip limits, and closures that may be implemented in order to prevent catch from exceeding the TACs will impact when and how such access to these stocks occurs; 3) Access restrictions implemented to control catch of one particular stock may indirectly impact access to other stocks; 4) Discarded fish count against the TAC; and 5) The timing and rate of landing of these stocks may impact the market for these species. These effects are described in more detail in the following section. This discussion builds upon the information contained in the affected environment, the description of the GB groundfish fishery.

The economic impacts of the proposed hard TACs are difficult to predict because of the 5 effects noted above, the fact that FY 2010 will include many new regulations and new sectors, and the fact that these effects interact in a complex manner. The amount of fish landed and sold will not be equal to the sum of the TACs, but will be reduced as a result of discards, and may be further reduced by limitations on access to stocks that may result from the associated rules. Reductions to the value of the fish may result from fishing derby behavior and potential impact on markets.

The cod and yellowtail TACs specified under the Understanding represent reductions to the size of the TACs compared to those specified for FY 2009 as shown in Table 96 below.

Table 96 – TACs for U.S./Canada stocks in FY 2009 and 2010

Stock	2009 TAC (mt)	2010 TAC (mt)	Difference
GB yellowtail	1,617	1,106	- 32 %
Eastern GB cod	527	338	- 36 %
Eastern GB haddock	11,100	11,988	+ 7 %

A further reduction to the TAC will result from the allocation of GB yellowtail flounder to the scallop fishery. Although the allocation to the scallop fleet is larger than in the past, the amount

of yellowtail caught by the scallop fleet is not likely to increase substantially over historical levels.

As noted above, it is difficult to predict the fishing patterns that are likely to occur in FY 2010 due to the many regulatory changes anticipated. Although there may be increased efficiencies as a result of sectors, as well as decreased discarding, which may increase revenue and/or profitability, the substantially reduced TACs will never-the-less result in reduced overall revenue. The reduced revenue will be due to both the decreased potential landings of cod and yellowtail, as well as a loss of revenue from other stocks caught on trips to the Eastern Area, when vessels lose access to this area when the TAC is projected to be caught. If the new management measures result in vessels being able to harvest more haddock, some of the decreased revenue described above may be recouped through increases in haddock landings.

Providing an estimate of possible catch levels and the associated revenue, based upon multiple assumptions, may be the most useful way of estimating economic impacts. Table 97 contains estimates of 2008 revenue from the U.S./Canada Area, based upon 'matched' dealer data, and extrapolations based on total trip length to trip length on matched trips.

Table 97 – Revenue from U.S./Canada Area for Fishing Year 2008

Eastern Georges Bank Cod	\$ 1,610,820
Eastern Georges Bank Haddock	\$ 3,797,560
Georges Bank Yellowtail Flounder	\$ 3,205,300
All Species (including other groundfish and non-groundfish species)	\$ 41,819,778

Table 98 provides an estimate of revenue associated with the proposed 2010 TACs, based upon the range of historical U.S./Canada Area catches, 2008 discard to catch ratios, and 2008 prices. Average price estimates are based on dealer reports submitted to the NMFS Fisheries Statistics Office. Catch and landings data are based upon VMS and dealer report data, and adjusted according to the methods described by Caless, Wilhelm and Wang, 2005. The estimate of the percentage of the TAC caught is based upon historic catch rates. It is likely that cod will be the most limiting stock.

Table 98 – Revenue Estimates from Landings of Shared Stocks from U.S./Canada Management Area for 2010

Stock	TAC	% of TAC Caught	Price/lb	Revenue
Eastern GB Cod	338	90 %	\$ 1.71	\$ 974,757
Eastern GB Haddock	1,106	13 %	\$ 1.09	\$ 3,595,090
GB Yellowtail	11,988	93 %	\$ 1.33	\$ 2,171,422

* Discard rates: 15 %, 4 %, and 28 % (cod, haddock, and yellowtail, respectively)

According to Table 97 and Table 98 above, for 2008 the total revenue from Eastern GB cod, Eastern GB haddock, and GB yellowtail was approximately \$ 8,613,680. For 2010, the estimate of the total revenue from Eastern GB cod, Eastern GB haddock, and GB yellowtail is \$ 6,741,269, a 22 % reduction from 2008.

When considering the revenue associated with the landings of cod, haddock, and yellowtail flounder from the U.S./Canada Area, and the impact of interannual fluctuations in the size of the

TACs, it is important to note that many other species are landed from trips to the U.S./Canada Area. If the time period during which vessels have access to the area is prolonged, there would also be increased landings of other groundfish and non-groundfish species, resulting in additional revenue. Due to the implications of catching a TAC for either the common pool or sector vessels on access to resources in addition to cod, haddock and yellowtail flounder, the reduced size of the 2010 cod and yellowtail TACs will affect total revenue in 2010. However, it is very difficult to estimate the potential revenue for *other stocks* caught on trips to the U.S./Canada Area for FY 2010 due to the fact that the number of vessels fishing in the common pool and in sectors is not finalized, and the regulations in FY 2010 will be significantly different from 2008. The U.S./Canada TACs will be divided between the common pool and sectors. When the common pool cod, haddock, or yellowtail flounder TAC is projected to be caught, common pool vessels may no longer fish in the Eastern U.S. Canada Area, and lose all fishing opportunity in the Eastern Area. If the yellowtail flounder TAC is caught, a common pool vessel may still fish in the Western U.S./Canada Area, but may not retain yellowtail flounder. When a particular sector catches its TAC of Eastern U.S. cod or haddock the implications are the same (as for a common pool vessel), however when a sector catches its TAC (ACE) for GB yellowtail flounder they lose fishing opportunity throughout the yellowtail stock area.

The estimated total revenue from 2007 was \$ 34,906,263 and there were 1,272 trips total, and 138 trips to the Eastern Area (\$ 27,442/trip based on total trips). During 2008, there were 1,273 trips, and 714 trips to the Eastern Area (\$ 32,851/trip based on total trips). Given the percentage reductions in the TAC proposed for GB yellowtail and Eastern GB cod, and the fact that both these TACs, when reached may curtail access to the U.S./Canada Area, it is possible that total revenue may be reduced by up to 30 percent from 2009 revenues. The U.S./Canada TACs in 2009 were slightly lower than the TACs in 2008. It also should be noted that the amount of haddock that has been harvested from the U.S./Canada Area has been increasing, but it is unknown whether this trend will continue.

In contrast with the No Action Alternative, the Proposed Action would have short term negative economic impacts, due to the fact that the harvest of the shared stocks would be constrained by the TACs. The long term impacts of the No Action Alternative are more likely to be negative than the proposed Alternative, due to the increase biological risk associated with the No Action Alternative. Stock rebuilding and the associated revenue that is likely to result from an increasing stock size could be jeopardized by the No Action Alternative.

7.4.1.2 Commercial Fishery Effort Control Modifications

7.4.1.2.1 Option Two – Modification of Trip Limits

The economic impact of the proposed measures was evaluated by imposing the trip limits to observed activity for vessels that were in the common pool and had at least one Category A DAS as of September 1, 2009. Vessel trip reports submitted for trips taken during FY 2007 were used as a measure of activity. Monthly average prices calculated from dealer data were used to calculate revenues for each trip. Summing the value of observed trips taken by the common pool vessels provides a baseline against which the fishing regulations that will prevail under Amendment 16 as modified by FW44 can be compared.

To approximate FY 2010 fishing regulations the FY 2007 data were adjusted to account for the fact that possession of windowpane flounder, SNE winter flounder, Atlantic wolffish, and ocean pout would be prohibited. Days absent for each trip were calculated as the elapsed time between

the sailing and landing date reported in the VTR. Days absent were then adjusted to reflect the 24-hour clock that would be implemented under Amendment 16. Trips that occurred that landed pollock were adjusted to reflect the proposed pollock trip limit under consideration for this FW44. No adjustment for GOM cod was required since the proposed action would retain the GOM cod trip limit at FY07 levels. Taking all of these adjustments into account the Amendment 16 conditions as modified by the proposed action, the trips taken during FY2007 were filtered to eliminate trips that landed groundfish that would have exceeded the A DAS allocations for each permit holder. These trips were filtered by ordering each groundfish trip from highest gross stock to lowest. Any trip for which the running total of calculated days absent exceeded the allocated A DAS for FY2010 was deleted.

The analytical approach provides a basis of comparison between the effort control program as proposed under Amendment 16 (No Action) and the proposed modifications under FW 44. The approach is limited in that adjustments to fishing locations or strategies are not considered. Additionally, the possibility for leasing DAS to offset the impacts of either the simulated Amendment 16 /FW 44 scenario was not considered. For this reason, the estimated impacts may reflect an upper bound condition in terms of adverse impacts.

As of September 1, 2009 there were 279 permits with an A DAS allocation that had enrolled in the common pool. Of these permits 79 did not record any activity through a VTR during FY 2007. These permits were eliminated from further consideration. An additional 78 permits did not report any trip where groundfish were landed and 9 vessels were found to be unaffected by the A16/FW 44 measures. These 87 vessels were also eliminated from further consideration. This left 113 vessels that were retained for further analysis. Total estimated fishing revenue for these vessels during FY 2007 was \$24.8 million of which \$7.2 million (29%) came from trips where groundfish were landed. Note that total value of groundfish landed was \$4.2 million which represents 58% of the value of all species landed on groundfish trips, and 17% of total FY 2007 revenue.

After adjusting FY 2007 data for the A16/FW 44 measures estimated total revenue fell \$5.1 million to \$19.7 million; a reduction of 20.6% in total revenue and a 69% reduction in groundfish trip revenue. The majority of these impacts would be associated with the DAS reduction and 24-hour clock as revenues from any of the species with zero possession limits was low with the exception of SNE/MA winter flounder. Further, the total impact of the pollock possession limit was also low as only 36 of the common pool vessels reported landing any pollock during FY2007, and only 8 landed pollock in excess of the proposed trip limit on at least one occasion. Nevertheless for some of these 8 vessels pollock was an important source of total revenue.

The economic impacts of the A16/FW44 measures may be partially mitigated by DAS leasing. Using estimated days absent as a proxy for DAS the 113 common pool vessels used 1,944 DAS during FY2007. Conversion of these DAS into 24-hour clock increments amounts to 3,769 DAS which would be the number of 24-hour DAS required to replicate FY2007 fishing activity. With an estimated 1,291 DAS associated with A16/FW44 conditions groundfish activity an additional 2,478 DAS would be required to fish at FY2007 levels, but only about 3,600 category A DAS will be allocated to the common poll based on September 1 rosters. Note that these DAS allocations do not count carry-over DAS which would increase DAS that may be available for leasing. Even if there were sufficient leasable DAS were available restrictions on trading within vessel baseline characteristics may make it difficult to move DAS where they are needed.

Whether the current roster of vessels enrolled in the common pool is representative of the vessels that may end up in the common pool on May 1, 2010 is uncertain. For the most part, the current roster appears to be comprised of vessels that are primarily engaged in fisheries other than groundfish. During FY2007 of the 200 vessels that showed any activity only 50 took any more than 1/3 of total trips in the GOM. These 50 vessels took 3,458 trips of which 3,200 were to a GOM statistical area. However, the majority of these GOM trips (2,428) did not land any groundfish, skates, or monkfish leaving a total of 772 trips where groundfish was landed. Note that cod was landed on every trip taken to the GOM that landed groundfish. However, the 800 pound trip limit was constraining on only 188 occasions. Pollock was landed on less than half (304) of the 772 GOM groundfish trips, but with the exception of 46 occasions, landings of pollock were below the proposed 1,000 pound per day trip limit.

Impacts on Sector Membership

As of September 1, 2009, permits committed to sectors accounted for over 90 percent of the PSC for most stocks. Permit holders must make a decision whether to remain in a sector or to choose to fish under the common-pool effort controls by May 1, 2010. Permit holders can be expected to make this decision based at least in part on whether they think they will be more profitable in a sector or in the common-pool. An element of this evaluation is the amount of fish they can land under either set of rules. This is a complicated decision that is difficult to model given 20 groundfish stocks and because of the possibility that fishing behavior may change. If the decision is based solely on GOM cod landings, the effect on probable sector membership of the proposed differential DAS counting measure and the proposed GOM cod trip limit can be evaluated. Table 107 shows the probable sector membership if the decision is based solely on the potential GOM cod landings under the effort control measures proposed as compared to the sector PSCs. This comparison assumes that every DAS is used on the GOM and the trip limit is caught on every DAS. Note that even with fewer vessels in sector than in the common pool, under all three scenarios modeled the sector total PSC is higher than the common pool total PSC. The proposed measures have more impact on those vessels with a high history of GOM cod landings and those vessels can catch more GOM cod in sectors than in the common pool. Conversely, the permits that remain in the common pool are those that do not have recent history (FY 1996 – FY 2006) of landing large amounts of GOM cod. As noted above, many of these permits fish in other areas.

Under the No Action alternative, only 33 permits with DAS receive an allocation of GOM cod that is larger than the amount of GOM cod they can land under the Amendment 16 effort controls. This is about 20 percent of the permits that receive a larger GOM cod allocation under the Proposed Action. This measure is expected to increase the number of permits that are likely to join sectors when compared to No Action.

Table 99 – Probable sector membership if decision is based solely on potential GOM cod landings

	800 lb./DAS
Vessels in Common Pool w/DAS	812
Vessels in Sectors w/DAS	162
GOM Cod Common Pool PSC	37%
GOM Cod Sector PSC	63%

7.4.1.2.2 Option 4 – Effort Control Measure Adjustments

Impacts on Common Pool Vessels

This option authorizes the regional Administrator to change trip limits or DAS counting in order to either facilitate harvesting the ACL of a stock or to reduce the likelihood of exceeding the ACL for a stock. This provision complicates the decision that permit holders make while choosing to join a sector or to remain in the common pool. Any business plan evaluating the potential profitability of the common pool must consider that the trip limits or DAS counting may change over the course of the year and alter the possible revenues the permit can earn. There are no bounds on the changes that may be made, and similar authority in the past led to a 33 pound trip limit for GOM cod. Any estimates of common pool revenue will have much more uncertainty due to the possibility of regulatory changes that make the planning invalid. This may sway some permit holders to prefer the relative certainty of the sector allocations over the common pool when compared to No Action.

Another possible impact of this provision is that it may skew the DAS leasing and transfer markets when compared to the same market under the No Action alternative. Prices paid before a change in either a trip limit or differential DAS adjustment may not reflect the earnings potential of those DAS should a change be implemented. Buyers and sellers may choose to negotiate a price that is dependent on the regulations in effect when the DAS are used; this would seem to shift part of the risk to the seller of the DAS since most fishermen expect regulations to become more stringent over time.

Finally, this measure may encourage fishermen to alter fishing practices to fish under known conditions rather than risk a devaluing of their effort should trip limits be reduced or DAS counting rates be increased. When compared to No Action, this could create a derby that leads actually precipitates such changes. It may also depress prices and interrupt the flow of product to markets should all vessels choose to fish early in the year before any such changes can be announced. To some extent the existence of sectors may help mitigate these effects on markets if sector vessels avoid fishing at the same time.

7.4.2 Economic Impacts of Alternatives to the Proposed Action

7.4.2.1 ACL Specifications

7.4.2.1.1 Option One – No Action

As described in section 4.1.1, the No Action alternative assumes that because of statutory requirements NMFS would choose to establish an ACL system should the Council not do so. The assumption is that NMFS would adopt ACLs that were equal to the ABC set by the Council's SSC, but would not make allocation decisions considered the purview of the Council. As a result, under the No Action alternative there would not be a specific yellowtail flounder allocation to the scallop and groundfish fisheries. The No Action alternative also assumes that the U.S./Canada Resource Sharing Understanding TACs would not be adopted.

As noted in the discussion of the economic impacts of the Proposed Action (section 6.4.1.1.1), it is possible to develop a rough estimate of the revenues available from groundfish harvests using recent average prices. These analyses should be viewed with caution: it is not clear that the groundfish fishery will be able to harvest all ABCs/ACLs, as is assumed below. Indeed, recent experience suggests the opposite.

Using average of 2007 and 2008 prices and assuming the entire ABC is landed, the potential revenues from the proposed ABCs are \$198.5 million in FY 2010, increase to \$216.5 million in FY 2011, and decline to \$206.8 million in FY 2012 (Table 88). These revenues are highly dependent on landings of GB haddock, which account for more than half the total revenues

Because under No Action the ABC is higher than the ACL set by the Proposed Action, potential groundfish fishery revenues are also higher. The No Action alternative, however, may not fully meet M-S Act requirements to establish ACLs. Any NMFS action to implement these requirements would initially be a short-duration emergency or interim action and would not permanently adopt ACLs for this fishery.

Unlike the Proposed Action, the No Action alternative would not allocate yellowtail flounder to the scallop and groundfish fisheries. In the short term this could lead to larger ex-vessel revenues in both fisheries. With respect to the scallop fishery, absent a specific allocation of yellowtail flounder it is not clear how the scallop fishery could be limited by its yellowtail flounder catch even though Amendment 16 anticipates that by FY 2011 AMs will be in place to do so. The only existing regulation that would remain in effect is one that limits catches of yellowtail flounder within CAI, CAII, or the NLCA to 10 percent of the GB or SNE/MA yellowtail flounder TAC/ACL. While this provision has limited access to these areas in the past, and may in the future, it does not restrict overall scallop fishing activity outside the areas. Scallop management programs attempt to compensate permit holders with additional DAS in open areas if they lose trips in the scallop access areas. These trips may be less profitable because of lower catch rates, but these trips would not be affected by yellowtail flounder catches if an allocation is not made.

As a result of not making a yellowtail flounder allocation, scallop fishing revenues in FY 2011 and FY 2012 would likely be higher than anticipated under the Proposed Action. As shown in section 6.4.2.1.2, in FY 2011 and FY 2012 the limit on yellowtail flounder catch may reduce scallop fishery revenues by \$35 million and \$36 million, respectively. If an allocation is not made then the scallop catches would not be constrained by yellowtail flounder. The effects of the No Action alternative do not differ from the Proposed Action in FY 2010. Under the Proposed Action, the amount allocated to the scallop fishery is the amount the fishery is expected to catch while harvesting the total available scallop yield; it is not expected to constrain the scallop catch.

The No Action alternative would not establish U.S./Canada TACs that are recommended by the TMGC under the terms of the U.S./Canada Resource Sharing Understanding. As discussed in section 6.4.1.1.2 the economic effects of the TACs are difficult to predict because in FY 2010 many new regulations and additional sectors will be implemented. In A qualitative sense, not setting the U.S./Canada TACs removes a layer of regulatory restrictions from the groundfish fishery. When TACs are specified for the EGB cod and haddock stocks (as is the case with the Proposed Action), the amount of these two species that can be harvested from the Eastern U.S./Canada area is constrained. This has not been an issue for EGB haddock because the TACs are larger than recent catches. But the small allocations of EGB cod have limited fishing opportunities in this area. For example, in July 2005 the number of trips a vessel could take into the area was reduced to one per month and vessels were required to use a separator trawl, and in

August 2005 the area was closed. All of these measures were implemented to prevent the EGB cod TAC from being exceeded. If a TAC is not specified, it is possible that more haddock will be taken from the Eastern U.S./Canada area, increasing revenues from this stock. It is also possible that other species will be successfully harvested from this area without the EGB cod limit.

There may be similar effects from not specifying a GB yellowtail flounder TAC. NMFS has modified access to the area in order to reduce the likelihood that this TAC will be exceeded. Without a TAC specified these measures cannot be triggered. This may allow for increased catches of all groundfish stocks as well as monkfish and skates from GB.

In the short term, not specifying the U.S./Canada TACs could lead to increased revenues for U.S. fishermen. As noted in section 6.1.1.1.2, however, not specifying TACs may increase the risks of overfishing these stocks and lead to long-term declines in landings and revenues.

The CAI Hook Gear Haddock SAPs would be the same under the No Action and Proposed Action. The economic impacts of No Action would not differ from the Proposed Action; they are described in section 6.4.1.1.1.

7.4.2.1.2 Sub-option 1 – Yellowtail Flounder Allocation to Scallop Fishery

The allocation of yellowtail flounder between the scallop and groundfish fisheries may affect the fishing opportunities of the respective fleets. Determining the exact impact of the allocations is difficult because of the different management measures between the two fisheries. In particular, the AMs that apply to the fisheries shape the extent of the impacts. The approach for analyzing the impacts of the alternatives not selected was identical to that described in the economic impacts of the Proposed Action (see section 6.4.1.1.1 for details). The general discussion in that section is applicable to this alternative as well.

The relative value of yellowtail flounder to the two fisheries was calculated, but the characterization of this value as a loss or gain to either fishery is complicated by the different management measures just described. The results of these calculations are shown in Table 100 through Table 104. Each metric ton of yellowtail flounder is more valuable to the scallop fishery in areas with lower discard rates because more scallops are landed for each metric ton allocated. Because of higher discard rates on GB – particularly in the CAII access area – the lowest values of yellowtail flounder are in this area. Overall, allocating 90 percent of the expected yellowtail flounder catch in GB and SNE/MA may reduce scallop vessels revenues by \$29 to \$37 million, depending on the scallop management scenario selected for FY 2010 – FY 2012. This ranges from 7% to 12% of forecast scallop revenues. As previously explained, in FY 2010 these revenue changes are unlikely to be realized by the scallop fishery since there are no specific measures that limit overall scallop fishing if the yellowtail flounder allocation is exceeded.

Table 100 – Summary of YT needed by scallop fishery in 2010-2012 in MT and % of total YT
ABC

		total YT needed (mt)			% YT needed		
No Closure - F=0.20		2010	2011	2012	2010	2011	2012
	CC	30	26	32	3.40%	2.40%	2.80%
	GB	110	226	353	9.2%	20.9%	28.8%
	SNE	111	96	151	22.5%	14.0%	15.0%
No Closure - F=0.24		2010	2011	2012	2010	2011	2012
	CC	39	26	32	4.5%	2.5%	2.8%
	GB	146	230	320	12.2%	21.2%	28.7%
	SNE	135	98	151	27.3%	14.3%	15.1%
Closure F=0.18		2010	2011	2012	2010	2011	2012
	CC	17	13	10	2.0%	1.3%	0.9%
	GB	182	256	320	15.2%	23.7%	26.1%
	SNE	179	130	151	36.3%	19.0%	15.1%

Table 101 – Yellowtail flounder allocated to the scallop fishery under the Groundfish Committee recommendation (90 percent of amount expected to be harvested). Not reduced for management uncertainty. Note the Committee did not recommend a specific allocation for CC/GOM yellowtail flounder.

YTF Allocated, By Stock Area and Scallop Management Scenario			
	<i>CC</i>	<i>GB</i>	<i>SNEMA</i>
NC, F=0.2			
2010	<i>27</i>	99	99.9
2011	<i>23.4</i>	203.4	85.5
2012	<i>28.8</i>	317.7	135
NC, F=.24			
2010	<i>35.1</i>	131.4	121.5
2011	<i>23.4</i>	207	88.2
2012	<i>28.8</i>	316.8	135.9
CL, F=0.18			
2010	<i>15.3</i>	163.8	161.1
2011	<i>11.7</i>	230.4	117
2012	<i>9</i>	288	135.9

Table 102 – Change in scallop fishery revenues per mt of yellowtail flounder allocated, by year, YTF stock area and scallop management scenarios. Assumes allocation is 90 percent of expected harvest.

Year/ Scenario	Change in Revenue/mt YTF, Dollars			Change as Percent of Revenues from YTF Stock Area		
	CC	GB	SNE/MA	CC	GB	SNEMA
NC, F=0.2						
2010	\$1,721,301	\$157,963	\$2,469,361	3.3%	0.9%	1.1%
2011	\$3,500,027	\$116,969	\$3,544,078	3.8%	0.2%	1.3%
2012	\$3,809,121	\$271,570	\$1,778,705	3.1%	0.3%	0.7%
NC, F=.24						
2010	\$1,702,671	\$157,540	\$2,051,633	2.6%	0.7%	0.8%
2011	\$3,317,598	\$109,586	\$3,297,153	3.8%	0.2%	1.2%
2012	\$3,535,475	\$252,150	\$1,727,238	3.1%	0.3%	0.7%
CL, F=0.18						
2010	\$2,116,906	\$185,627	\$1,883,399	5.9%	0.5%	0.6%
2011	\$3,875,276	\$100,106	\$2,405,464	7.7%	0.2%	0.8%
2012	\$4,641,334	\$241,138	\$1,952,471	10.0%	0.3%	0.7%

Table 103 – Change in scallop revenues if YTF allocation is 90 percent of amount expected to be harvested for all stocks

Scenario	Year		
	2010	2011	2012
NCF=.2	\$34,311,399	\$45,412,307	\$48,456,161
NCF=.24	\$36,596,510	\$43,656,154	\$46,356,842
CF=.18	\$40,652,329	\$39,015,938	\$41,918,146
As Percent of Total Scallop Revenues			
NCF=.2	11%	9%	9%
NCF=.24	10%	9%	8%
CF=.18	13%	8%	7%

Table 104 – Change in scallop revenues if YTF allocation is 90 percent of amount expected to be harvested for GB and SNE/MA stocks, and no specific allocation for CC/GOM YTF stock (*Sub-Option 1 -Groundfish Committee recommendation*)

Scallop Scenario	Year		
	2010	2011	2012
NCF=.2	\$29,147,495	\$36,312,238	\$36,266,973
NCF=.24	\$29,956,093	\$35,030,399	\$35,043,322
CF=.18	\$37,053,589	\$33,978,079	\$37,276,812
As Percent of Total Scallop Revenues			
NCF=.2	9%	7%	6%
NCF=.24	8%	7%	6%
CF=.18	12%	7%	7%

A similar analysis was performed for the groundfish fishery for the GB and SNE/MA yellowtail flounder stocks. In both stocks areas two calculations were developed. The first is a straightforward estimate of the value of each metric ton of yellowtail flounder based on 2007 and 2008 data. The second calculation determined the total value of all species landed on groundfish trips in the area, and then determined the value of this total per metric ton of yellowtail flounder landed. This high value is most appropriate for those vessels in sectors, or for FY 2012 when the hard TAC AM affects common pool vessels, since it shows the loss of all revenue if yellowtail flounder leads to a complete loss of access to a stock area. On Georges Bank this was further refined for common pool vessels by taking into account discard rates and the different management measures in the Eastern and Western U.S./Canada areas. Since the Eastern Area closes if the yellowtail flounder TAC is exceeded, all revenues were sacrificed from this area, while fishing continues in the Western Area. This provides a third, or expected, value per metric ton. In the SNE/MA area, only trips that landed yellowtail flounder were considered in the analysis. These values were multiplied by the allocations under consideration to determine the revenue reductions for the groundfish fishery under the proposed allocation and the three scallop management scenarios under consideration.

Results are summarized in Table 105 and Table 106. The value of each metric ton of yellowtail flounder to the groundfish fishery ranges from a low of \$3,296 to a high of \$41,176. GB yellowtail flounder is more valuable than SNE/MA yellowtail flounder because of the increased groundfish fishing opportunities on GB. The total losses to the fishery range from a low of \$715,000 to a high of \$16.9 million over the next three years under the three possible scallop management scenarios. To put these values in context, FY 2005 to FY 2007 groundfish revenues averaged \$101 million and total revenues on groundfish trips averaged \$158 million, but Amendment 16 may reduce groundfish revenues by 15% and total revenues by 18%. The changes estimated here thus fall in the range of less than one percent to 19.6% of groundfish revenues, and less than one percent to 11.9% of total revenues on groundfish trips.

Table 105 – Change in revenues on groundfish trips per mt of YTF; average of 2007 and 2008.
See groundfish PDT report for details. For GB, expected revenues consider difference in management measures for common pool vessels between EGB and WGB.

	GB	SNE/MA
YTF Revenues/mt	\$3,296	\$3,895
Total Revenues/mt	\$41,176	\$28,708
Expected Revenues/mt	\$12,674	

Table 106 – Reduction in groundfish revenues if scallop fishery is allocated 90 percent of expected harvest of YTF for GB and SNE/MA YTF stock areas. These values represent the difference between potential groundfish revenues if there is no scallop fishery catch of yellowtail flounder and the proposed allocation. Based on 2007/2008 revenues.

	Georges Bank			SNE/MA	
	Low	High	Expected	Low	High
NC, F=0.2					
2010	\$326,304	\$4,076,424	\$1,254,726	\$389,111	\$2,867,929
2011	\$670,406	\$8,375,198	\$2,577,892	\$333,023	\$2,454,534
2012	\$1,047,139	\$13,081,615	\$4,026,530	\$525,825	\$3,875,580
NC, F=.24					
2010	\$433,094	\$5,410,526	\$1,665,364	\$473,243	\$3,488,022
2011	\$682,272	\$8,523,432	\$2,623,518	\$343,539	\$2,532,046
2012	\$1,044,173	\$13,044,557	\$4,015,123	\$529,331	\$3,901,417
CL, F=0.18					
2010	\$539,885	\$6,744,629	\$2,076,001	\$627,485	\$4,624,859
2011	\$759,398	\$9,486,950	\$2,920,090	\$455,715	\$3,358,836
2012	\$949,248	\$11,858,688	\$3,650,112	\$529,331	\$3,901,417

All of these estimates assume no changes in fishing behavior by either fishery. In both cases changes in fishing practices could mitigate potential revenue losses. For example, if the ratio of yellowtail flounder caught to scallops landed can be decreased through either gear modifications or fishing practices, then the scallop fishery will harvest more of its available yield prior to triggering any AMs that may be adopted for FY 2011 and beyond. If the groundfish fishery can do the same – reducing the yellowtail flounder caught while fishing for other species – the same result can be expected and revenue losses would not be as large as estimated here. There is evidence in observed groundfish fishing trips that this may be possible, at least for roundfish species.

Compared to the No Action alternative, this measure is likely to reduce scallop fishery revenues. Under No Action, no specific allocation is made to the scallop fishery and thus the scallop yield should approach that estimated for the adopted scallop management scenario. For the groundfish fishery the differences between this option and No Action are less certain. If an allocation is not made to the scallop fishery, then the overall yellowtail ACL would serve as the trigger for groundfish AMs. Since the scallop fishery presumably would still catch yellowtail flounder without any limit, it is possible that excessive yellowtail flounder catches would result in groundfish AMs and lost fishing opportunities for this fleet.

7.4.2.2 Commercial Fishery Effort Control Modifications

7.4.2.2.1 Option One – No Action

Under the No Action alternative, the impacts of the common pool effort controls would not differ from those described in Amendment 16. While these indicate that reductions in revenue can be expected for most vessels under the Amendment 16 provisions, no additional reductions would be likely to occur. As noted in Amendment 16, there is some uncertainty about these impacts given the uncertainty over sector membership.

Unlike the Proposed Action, under this option the Regional Administrator would not have the authority to modify trip limits and DAS counting in order to reduce the likelihood an ACL will be exceeded or to facilitate harvesting an ACL. As a result, there is less likelihood that fishermen would choose to participate in a derby to use their DAS before any in-season adjustments were made. Fishermen would also have more ability to plan their business operations for the year without a concern that a trip limit or DAS counting change would invalidate plans. This may also influence the decision a permit holder makes on whether or not to join a sector. With less uncertainty about changes in the common pool regulations, more permit holder might choose not to join a sector.

7.4.2.2.2 Option Three – Modification to DAS Counting

Impacts on Common-Pool Vessels

Impacts of these measures, as described here, are marginal impacts; that is, they are in addition to any changes in revenue that occur under Amendment 16. The economic impact of this option was evaluated the same way as for the Proposed Action (see section 6.4.1.2.1).

Trips that occurred that landed groundfish within the differential DAS area were counted at a rate of 2:1 and any trips landing pollock were adjusted to reflect the proposed pollock trip limit. No adjustment for GOM cod was required since the proposed action would retain the GOM cod trip limit at FY07 levels. The DAS allocations under both scenarios were the same since FW44 would not change initial allocations.

The analytical approach provides a basis of comparison between the effort control program as proposed under Amendment 16 and the proposed modifications under FW44. The approach is limited in that adjustments to fishing locations or strategies are not considered. Additionally, the possibility for leasing DAS to offset the impacts of either the simulated Amendment 16 or FW44 scenarios was not considered. For this reason, the estimated impacts may reflect an upper bound condition in terms of adverse impacts.

As of September 1, 2009 there were 279 permits with Category A DAS allocations that had enrolled in the common pool. Of these permits 79 did not record any activity through a VTR

during FY 2007. These permits were eliminated from further consideration. An additional 98 permits did not report any trip where groundfish, monkfish, or skates were landed and were also eliminated from further consideration. This left 104 current common pool permits that were retained for further analysis. Among the remaining 104 common pool members the majority (93) would not be affected either by the change in the pollock trip limit or the differential DAS counting area either because they either 1) did not fish for groundfish in the GOM, or 2) landed relatively low quantities of pollock, or 3) had sufficient DAS allocations so they were not constrained by DAS or 4) some combination of the three.

Among the 9 affected vessels the estimated reduction in total revenue ranged widely to approximately 10% to nearly 70%. Estimated revenue losses for about half of the vessels were less than 15% while revenue losses for the others, was much larger ranging between 33% and 70%.

Whether the current roster of vessels enrolled in the common pool is representative of the vessels that may end up in the common pool on May 1, 2010 is uncertain. For the most part, the current roster appears to be comprised of vessels that are primarily engaged in fisheries other than groundfish. During FY 2007 of the 200 vessels that showed any activity only 50 took any more than 1/3 of total trips in the GOM. These 50 vessels took 3,458 trips of which 3,200 were to a GOM statistical area. However, the majority of these GOM trips (2,428) did not land any groundfish, skates, or monkfish leaving a total of 772 trips where groundfish was landed. Note that cod was landed on every trip taken to the GOM that landed groundfish. However, the 800 pound trip limit was constraining on only 188 occasions. Pollock was landed on less than half (304) of the 772 GOM groundfish trips, but with the exception of 46 occasions landings of pollock were below the proposed 1,000 pound per day trip limit.

Impacts on Sector Membership

As of September 1, 2009, permits committed to sectors accounted for over 90 percent of the PSC for most stocks. As described in section 6.4.1.2.1, permit holders must make a decision whether to remain in a sector or to choose to fish under the common-pool effort controls by May 1, 2010. If the decision is based solely on GOM cod landings, the effect on probable sector membership of the proposed differential DAS counting measure and the proposed GOM cod trip limit can be evaluated. Table 107 shows the probable sector membership if the decision is based solely on the potential GOM cod landings under the effort control measures proposed as compared to the sector PSCs. This comparison assumes that every DAS is used on the GOM and the trip limit is caught on every DAS. Note that even with fewer vessels in sector than in the common pool, under all three scenarios modeled the sector total PSC is higher than the common pool total PSC. The proposed measures have more impact on those vessels with a high history of GOM cod landings and those vessels can catch more GOM cod in sectors than in the common pool. Conversely, the permits that remain in the common pool are those that do not have recent history (FY 1996 – FY 2006) of landing large amounts of GOM cod. As noted above, many of these permits fish in other areas.

Table 107 – Probable sector membership if decision is based solely on potential GOM cod landings

	800 lb./DAS	2:1 Diff DAS	800 lbs/DAS and 2:1 Diff DAS
Vessels in Common Pool w/DAS	812	862	666
Vessels in Sectors w/DAS	162	112	308
GOM Cod Common Pool PSC	37%	49%	14%
GOM Cod Sector PSC	63%	51%	86%

7.5 Social Impacts

The need to assess social impacts emanating from federally mandated fishing regulations stems from National Environmental Protection Agency (NEPA) and M-S Act mandates that the social impacts of management measures be evaluated. NEPA requires the evaluation of social and economic impacts in addition to the consideration of environmental impacts. National Standard 8 of the M-S Act demands that “Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of over fishing 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(2)(8)). The analysis that follows provides a context for understanding possible social impacts resulting from the proposed measures in Framework 44.

Amendment 13 identified five social impact factors: regulatory discarding, safety, disruption in daily living, changes in occupational opportunities and community infrastructure, and formation of attitudes. All of these factors can be affected by changes in management measures. Fishermen find regulatory discarding both distasteful and wasteful of valuable fishery resources. Modifications to daily routines can make long-term planning difficult. New gear requirements such as netting and some equipment must be ordered months in advance resulting in changes to daily routines when these modifications cannot be met in a time and cost efficient manner. Further the cost of making such changes may prove to be a burden for some vessel owners. Changes in management measures that limit access to fishing may increase the likelihood of safety risks. Increased risk can result when fishermen spend longer periods at sea in order to minimize steam time to and from fishing grounds, operate with fewer crew, and fish in poor weather conditions. Formation of attitudes refers to the positive or negative feelings or beliefs expressed by members of the communities that will be affected by the Proposed Action. The effect of the Proposed Action on these factors will be discussed below. It is important to note that, as in the case with the biological and economic impacts analyses for this framework, social impacts are very difficult to predict. FY 2010 will include many new regulations and new sectors, and these effects interact in a complex manner.

Amendment 13 also identified primary and secondary port groups that are most affected by changes in groundfish management. The criteria port groups identified for this action are

discussed in Section 5.6.2. It is not likely that this action would affect all of these port groups to the same extent. Those port groups that are more dependent on groundfish would likely have more social impacts than those that participate in a range of fisheries. Even among communities with similar dependence on groundfish, there are likely to be different impacts since some measures have localized impacts. The following discussion will also highlight the differences between port groups, where appropriate.

7.5.1 Social Impacts of the Proposed Action

7.5.1.1 ACL Specifications

7.5.1.1.1 Option Two – Northeast Multispecies Fishery ACL Specifications for Fishing Years 2010 – 2012

This option proposes to adopt specifications and ACLs for FY 2010 -2012. This measure includes not only the identification of ACLs as required by the M-S Act and as implemented by Amendment 16; it includes the allocation of yellow tail flounder between the groundfish and scallop fisheries as part of the ACL process. It also incorporates adoption of the incidental catch TACs for the special management programs that use Category B DAS, and it adopts the TACs for Eastern GB cod, Eastern GB haddock, and GB yellowtail flounder that are applicable to the U.S./Canada Resource Sharing Understanding. The social impacts of each of these elements will be discussed in this section.

Implementation of ACLs as required by the Magnuson-Stevens Act may have social impacts that are difficult to define. Since it cannot be determined whether the use of ACLs will change effort levels or allocation of the resource, the most likely type of impact is a change in the formation of attitudes toward the management process. The standardization of a process to determine fishing levels may lend a sense of legitimacy to fisheries management in the eyes of the public. However, the process for setting ACLs is quite complicated and technical, and some would-be public participants could be deterred from engaging in management forums.

The adoption of the ACLs may lead to concerns that the fishery is being managed in an overly conservative manner. This is not likely to occur until after stocks are rebuilt. Fishermen may view fishing at less than 75% of FMSY on a rebuilt stock as limiting their ability to benefit from rebuilding. This could affect attitudes towards the management program since it will be viewed as limiting occupational opportunities unnecessarily.

Because the ACLs are simply caps on the amount of catch that can occur for each stock in the fishery, the adoption of ACLs numbers itself does not have major social impacts. Rather, low ACLs drive conservative management strategies, and the methods for reducing effort or allocating the ACL are the largest contributors to impacts of a social nature. The sector and effort control systems for FY 2010 – 2012 were adopted in Amendment 16 and impacts of each measure were described in that document. Impacts of alternatives that would change allocations and management measures in FW 44 are analyzed below.

There is likely to be little difference between the social impacts of the Proposed Action and No Action. Under both circumstances, catches are limited, they may be viewed as conservative limits, and the complexity may deter participation in the management process. The relatively

minor differences in catch levels are not likely to alter the perception of the management program.

7.5.1.1.1.1 Proposed Action - Yellowtail Flounder Allocation to the Scallop Fishery

This measure allocates a portion of the yellowtail flounder ACL to the scallop fishery to account for incidental catches in that fishery. In FY 2010, the allocations to the scallop fishery are considered an “other sub-component” and are not subject to specific scallop fishery AMs. In subsequent years the allocation is considered a sub-ACL and the scallop FMP will adopt AMs to control these catches. Also, scallop vessels are required to land all yellowtail flounder that is caught. The measure may distribute the catches differently than has been done in the past, which may have some social impacts on both fleets.

Allocations are proposed for two stocks - GB yellowtail flounder and SNE/MA yellowtail flounder – and are based on 100 percent of the amount the scallop fishery is expected to catch if they harvest the projected scallop yield in FY 2010, and 90 percent of the amount in FY 2011 and FY 2012. These amounts of yellowtail flounder were estimated by comparing recent discard rates, projected increases in scallop and yellowtail flounder abundance, and future scallop yields. The scallop fishery catch of CC/GOM yellowtail flounder is estimated to be a small amount and so a specific allocation is not made; catches are considered part of the “other sub-components.”

In addition to specific concerns about catch levels and rebuilding timelines, when compared to No Action any measure that shifts allocation from one fishery to another may have impacts on some of the other social impact categories. *Changes in occupational opportunities* could occur if the allocation provides more opportunities in either fleet: if the scallop fishery is seen as advantaged from the allocation, then effort could shift into that fishery. *Formation of attitudes* could clearly be affected if constituents of either fishery feel disadvantaged by the measure with respect to the other fishery.

7.5.1.1.1.2 Sub-option Two – U.S./Canada Resource Sharing Understanding TACs

The proposed hard TACs for the U.S./Canada area are not expected to have significant social impacts. The TACs for EGB cod and haddock were determined in the same way as has been done in recent years. For GB yellowtail flounder, the TMG could not reach agreement on a TAC and so the TAC was set by the Council. TACs of the three co-managed species vary from year to year, and the FW 44 numbers are within the range of numbers that have been used in the past 5 years for cod and yellowtail flounder. For haddock, the allocation in the area is the largest in the most recent 5-year span. Although discarding may occur in the area as it does in the rest of the fishery, it is unlikely to be a special issue.

Although the Proposed Action would have short-term negative economic impacts in contrast to the No Action Alternative, the impacts should not be significantly different from those in the rest of the fishery in a way that would cause them to have unique social impacts. The long term impacts of the No Action Alternative are more likely to be negative than the Proposed Action. Stock rebuilding is likely to have positive social effects, as it will allow effort to increase in the area, and such rebuilding could be jeopardized by the No Action alternative.

7.5.1.2 Commercial Fishery Effort Control Modification

7.5.1.2.1 Option Two – Modification of Trip Limits

This option proposes to modify the trip limit for GOM cod to 800 lbs./DAS with a maximum of 4,000 lbs./trip. A trip limit for pollock is also adopted, at 1,000 lbs./DAS and 10,000 lbs./trip. These two trip limits will be implemented at the start of the fishing year. Finally, the yellowtail flounder trip limits applicable to scallop dredge vessels are removed and scallop vessels are required to land all legal-sized yellowtail flounder. As recommended by the Groundfish Committee, this regulation would apply to all scallop vessels, both limited access and general category.

Trip limits are most likely to affect *regulatory discarding* and *formation of attitudes*. In general, trip limits can affect the structure of a fishery. If the trip limit is set very low, the inshore sector of the fleet can sometimes manage to fish economically, while the offshore sector of the fleet cannot cover trip expenses to direct fishing effort on the species managed by the trip limit. This can change the structure of revenues generated in the fishery and can ultimately change the long-term structure of the fishery itself.

Social impacts have resulted because the trip limits themselves hold a socially-undesirable characteristic – *regulatory discarding*. The impacts of regulatory discarding are discussed *infra*. In the past, different trip limits for cod on Georges Bank and in the Gulf of Maine also have created perceptions of inequity between some sectors of the fishery. Although they are separate stocks of cod and there are many reasons for different trip limits, codfish are marketed similarly no matter where they are caught (sometimes prices may vary depending on how they are caught). Fishermen in the Gulf of Maine may be disadvantaged in terms of the fresh fish market for cod. Moreover, larger vessels from Gulf of Maine ports may be able to fish on Georges Bank and land more cod, increasing perceptions of inequity in some communities. This often exacerbates conflicts between sectors of the industry, which create social impacts in the form of intracommunity conflicts and loss of community cohesion.

The extent of the impacts of proposed trip limits will depend upon which permits ultimately fish in sectors. The sector rosters may change before the beginning of the fishing year since permits can be withdrawn from sectors until May 1, 2010. Setting low trip limits for GOM cod and pollock may cause some vessels that would have otherwise opted to fish in the common pool to register for sectors, since the amount of these valuable species that they will be able to catch will decrease. The social impacts of sectors themselves are analyzed in Amendment 16, and those impacts will be more pronounced if more vessels join sectors as a result of this trip limit measure.

One likely result of the 800 lb./trip limit is that GOM cod *regulatory discards* would remain high. Current stock size is projected to be close to, or perhaps even higher than, SSB_{MSY} (see Figure 25), yet the proposed trip limit is the same as that adopted in Amendment 13 when stock size was less than one-fourth the current projected stock size. To the extent that regulatory discards of GOM cod are proportional to increases in stock size, discard rates for common pool vessels are likely to increase under this measure from recently seen values. Under the No Action alternative, the trip limit is larger, so regulatory discards resulting from the trip limit would likely be smaller; this measure would probably increase discards when compared to No Action as well.

This measure also adopts a pollock trip limit of 1,000 lbs./DAS and 10,000 lbs./trip. Under existing regulations and the No Action alternative there is no trip limit for pollock. It is not clear

how much pollock the vessels in the common pool can catch absent a trip limit, and so it is difficult to tell whether *regulatory discards* will increase dramatically as a result of this measure. It is not clear if these identified common pool vessels will target pollock if a trip limit is not adopted, nor is it clear that other vessels will leave sectors based solely on potential pollock catches. Since there is no trip limit for pollock under No Action, the Proposed Action is likely to negatively affect attitudes resulting from regulatory discards when compared to No Action.

It is difficult to determine whether fishing behavior will be significantly altered by the measure requiring scallop vessels to land all yellowtail flounder. If fishing behavior is not greatly altered, catches within the access area should not change and *regulatory discards* will be converted to landings. Adopting this requirement should reduce *regulatory discards* of yellowtail flounder as compared to No Action – almost all yellowtail flounder caught by limited access vessels is presently discarded, while general category scallop vessels are not allowed to land yellowtail flounder and all that they catch is discarded. That change would have positive social impacts, both on the scallop fleet that reduces discards and on the groundfish fleet which will have a positive view of the reduction in discards. But if the vessels choose to take advantage of this regulation and target yellowtail flounder then catches could increase and if this occurs in the access areas it may reduced the contribution of those areas to groundfish rebuilding. This could be an issue for CAII. Recent assessments indicate that the GB yellowtail flounder stock is heavily concentrated in this area. To the extent that the area is providing benefits to rebuilding by serving as a refuge for yellowtail flounder, increased targeting by any vessels in this area may slow rebuilding. It is not clear, however, that the area is serving in this fashion. Not only would slower rebuilding result in decreased catch for fishermen (which would have similar impacts to the ACL measures described above), but the long-term positive social impacts anticipated by the rebuilding program will be delayed.

7.5.1.2.2 Option 4 – Effort Control Measure Adjustments

This measure authorizes the Regional Administrator to adjust trip limits or DAS counting rates during the fishing year in order to facilitate harvesting the ACL or to reduce the likelihood the ACL is not exceeded. Since sector membership will not be known with certainty until May 1, 2010, there is more uncertainty about the effectiveness of the effort control measures than with prior management actions. This option gives the Regional Administrator two tools that can be readily used should the measures prove to be misaligned with fishing activity in the common pool. The result is that there should be more certainty about maintaining catch at or below the applicable ACLs, increasing the likelihood that fishing mortality targets will be achieved.

This measure is administrative in nature and is not, in itself, likely to have negative impacts on any of the social factors with the possible exception of *formation of attitudes*. If the RA is perceived to overstep its authority or make in-season modifications that are not satisfactory to fishery participants, such perceptions could lead to hostility toward the management agency. However, this is not guaranteed to happen because other social factors may be positively impacted.

Disruptions in daily living, for example, could be mitigated by this measure. One rationale for endowing this authority upon the RA is to slow fishing effort throughout the year in order to avoid a derby fishery after the hard TAC AM is implemented in 2012. A derby fishery would cause major disruptions in daily living by concentrating fishing activity at the beginning of a year. By limiting trip limits, or charging high DAS counting rates, fishermen might be dissuaded from fishing during periods these regulations are in effect. Conversely, if the RA implements severe

measures during the fishing year that prohibit some fishermen from making profitable trips, disruptions could actually increase because of this measure. As noted in the economic impacts (section 6.4.1.2.2), authorizing in-season changes could actually increase the likelihood of a derby fishery if fishermen rush to fish before an in-season change is adopted.

Finally, *safety* could have positive impacts in a similar manner as *disruptions in daily living*. The possibility of a derby fishery has negative safety implications as fishermen race to fish often in spite of poor weather or crew conditions, so any measure that reduces its possibility will have a positive impact on safety.

As a result of these concerns, the impacts of this measure are likely to be negative when compared to No Action.

7.5.2 Social Impacts of Alternatives to the Proposed Action

7.5.2.1 ACL Specifications

7.5.2.1.1 Option One – No Action

The No Action alternative for specifications, if adopted, would entail the failure by the Council to adopt ACLs for the fishery and, as a result, implementation of ACLs by NMFS, as well as a lack of TACs for the U.S./Canada area and no special allocation of yellowtail flounder to the scallop fishery. A description of the social impacts of using ACLs in the management of the groundfish fishery can be found in Amendment 16.

The Amendment 16 analysis of ACLs stated that, “The adoption of the ABC control rules may lead to concerns that the fishery is being managed in an overly conservative manner.” The No Action alternative contemplates the use of the ABC numbers in lieu of the ACLs proposed in Option 2. It should be noted that the proposed ACLs are actually more conservative than the ABCs due to the fact that the former are set lower in order to account for management uncertainty.

7.5.2.2 Commercial Fishery Effort Control Modification

7.5.2.2.1 Option One – No Action

Under the No Action alternative, the effort control measures adopted by Amendment 16 would apply to common-pool groundfish fishing vessels – that is, those that do not join a sector. These measures were evaluated in Amendment 16 to determine the social impacts.

Based on sector rosters as of September 1, 2009, a large number of permits have been committed to sectors. These commitments can still be reversed until May 1, 2010, so sector membership is still not known with certainty. The permits that have not committed to sectors are described in

Section 5.6.4. The social impacts to the fishery will be determined, in large part, by the number and makeup of permits that ultimately fish in sectors in 2010.

To the extent fishing behavior changes in ways not predicted by the analyses in Amendment 16, there may be less certainty about achieving the mortality objectives of Amendment 16 if the No Action alternative is selected. A failure to meet mortality objectives would result in further decreases to fishing effort in the future, and a delayed appreciation on the benefits of a rebuilt fishery.

No Action could lead more people to be in the common pool in comparison with the other alternatives. This could have social impacts, although it is not possible to determine what the exact impacts would be. The social impacts of sectors are explored in Amendment 16; if more people join sectors, these impacts would be amplified. Such impacts are complex and will depend upon the success of rebuilding strategies and sector implementation. Since sectors were projected to have primarily positive social impacts, especially in the long-term, it can be assumed that the No Action alternative will lead to fewer long-term positive impacts.

7.5.2.2.2 Option Three – Modification to DAS Counting

This measure proposes to count common-pool vessel DAS at a 2:1 rate in the GOM differential DAS area at the beginning of the fishing year. This measure will reduce fishing effort by common pool vessels in this area.

Changes in the way that DAS are counted can sometimes equate to DAS reductions. If DAS are counted at a 2.25:1 rate year-round in the inshore Gulf of Maine area, for example, vessels that are able to fish only in that area effectively receive a further reduction in the DAS available for them to use. For vessels that may be able to access other areas to fish at a 1:1 DAS counting rate, it is likely that they will move to those areas where the regulation may not impact them. This could be farther from shore, possibly compromising their *safety*.

Social impacts of DAS reductions tend to be more far-reaching and long-term in nature than social impacts from other management measures like trip limits, gear restrictions, and seasonal area closures. They tend to have the most significant impacts on *disruption in daily living* and *changes in occupational opportunities and community infrastructure*, although as mentioned they also can affect *safety*. Unlike a revised trip limit, though, this measure is not likely to lead to increased *regulatory discards* of GOM cod or pollock. Impacts on the other factors result from direct reductions in groundfish fishing opportunities and revenues for vessels that are most active in the fishery. Reductions in groundfish fishing opportunities through the loss of DAS also compromise vessels' flexibility and can have direct impacts on fishing activity within a port, consequently impacting the shoreside facilities that are dependent on the affected vessels. Other impacts of DAS reductions include increased uncertainty and instability in the fishery and/or community; problems finding and keeping crew members on a year-round basis; social impacts related to family and business financial problems; overall increased stress at the individual, family, and community level; and reductions in perceptions about job satisfaction.

Indirect negative social impacts resulting from DAS reductions relate to adaptations that vessels make to compensate for reduced opportunity and reduce income, which can oftentimes increase their risk-taking and compromise their safety at sea. As income is reduced, some fishermen will try to minimize their operating costs in order to stay viable, sometimes reducing or eliminating

crew, especially on smaller vessels. More owners of smaller vessels could be forced to fish alone for some or all of the year. Vessels may also try to maximize their remaining DAS by fishing during the winter when prices are usually better. Winter weather is more extreme and less predictable, increasing dangers that fishermen may encounter.

In addition, the disproportionate impacts of DAS reductions or differential DAS counting areas can create perceptions of inequity, which often exacerbate social impacts occurring in communities involved in groundfish fishing harvesting. Some people think that DAS allocations from Amendments 5 and 7 were unfair and created inequities and tensions between sectors involved in the fishery. Those who switched from groundfish to other fisheries with the decline of the groundfish stocks feel that they were punished by not receiving their true historical allocation of DAS. Many fishermen feel that they have sacrificed more than their share to rebuild the resource and are concerned about their future ability to realize the benefits of their sacrifices. Vessels that stand to be the most impacted by differential DAS counting in this framework are those that currently fish in the inshore GOM. As a result, some vessel owners may feel unfairly treated and disproportionately impacted by the capacity alternatives.

The economic impacts of DAS reductions that are being considered in this amendment are discussed in the economic impacts section. Certainly the most significantly impacted vessels from an economic perspective will be those that currently fish in the inshore GOM. Similarly, the most significantly impacted communities will be those that are geographically proximate to the area or that serve as the homeport for vessels that fish there. Northern New England ports such as Portland, Boston, Gloucester, the NH Seacoast, and Portsmouth, exhibit a relatively high dependence on the inshore GOM fishing area and the GOM cod fishery.

With respect to the potential landings of GOM cod by vessels committed to sectors as of September 1, 2009, the maximum impact of this measure would occur if these vessels used all their DAS in the differential DAS area. Effectively this would reduce the potential landings in half, and would be the equivalent to a 50% DAS cut for vessels that fish in the area. When combined with the proposed 800 lbs./DAS trip limit the results show a larger decline. However, if vessels can shift effort into other areas or other stocks, the impacts will be lessened.

7.6 Impacts on Other Fisheries

The M-S Act requires that fishery management plans or amendments assess, specify, and describe the likely effects, if any, of the conservation and management measures on participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of the participants. Amendment 16 described the impacts of the proposed management program on several fisheries. Since this action adopts measures designed to make Amendment 16 more effective, and to achieve the mortality targets in the amendment, it is not expected to result in substantially different impacts on other fisheries.

The Mid-Atlantic Fishery Management Council (MAFMC) manages several fisheries that take place off the coast of southern New England. The geographic range of these fisheries overlaps the range of the multispecies fishery, and many multispecies permit holders participate in these other fisheries. The principal fisheries managed by the MAFMC that may be affected by this action are for:

- Dogfish (jointly managed with the NEFMC)
- Scup
- Black Sea Bass
- Squid
- Summer Flounder

Three fisheries managed by the NEFMC – monkfish, skates, and the scallop fishery – may also be affected by this action, but as described below these effects are not expected to differ from those described in Amendment 16.

7.6.1 Mid-Atlantic Fisheries

The Proposed Action implements specifications (OFLs/ABCs/ACLs) for groundfish stocks as required by Amendment 16. These values are consistent with the fishing mortality targets adopted by that action. AS such, the impacts on other fisheries – including those managed by the MAFMC – are expected to be consistent with those described in Amendment 16. In general, the overall concern is that the ACLs, and management measures designed to restrict catches to those ACLs, may limit fishing opportunities to such an extent that effort is redirected into other fisheries. Since many of these fisheries are managed through quotas, it is not likely that such effort shifts will lead to overfishing. It is more likely that any substantial effort shifts would have an adverse impact on the economic performance of the fishery as the quota is distributed among more vessels and/or trips. It could also lead to more rapid closures as quarterly or seasonal quotas may be reached more quickly, interrupting the supply of these products to markets.

The adoption of lower trip limits for GOM cod and pollock are not expected to have substantial impacts on the MAFMC fisheries. These measures apply only to common pool vessels, and based on the sector rosters available as of September 1, 2009 the active vessels in this category are a relatively small number of permits. Many of them do not fish in the GOM, the primary area where these stocks are caught, so the measure will have little effect on them. And it is not likely that the vessels that are affected will relocate to the SNE area to fish on MAFMC-managed stocks.

7.6.2 Scallop Fishery

The scallop fishery will be directly affected by the decision on the amount of yellowtail flounder to allocate to the groundfish and scallop fisheries. These impacts are described in the sections 6.1 through 6.5.

7.6.3 Skate Fishery

The skate fishery could be affected by effort shifts into that fishery, as described in Amendment 16. On the whole, the Amendment 16 effort reductions are expected to benefit skate stocks. This action adopts specifications consistent with Amendment 16 and no impacts beyond those described in the Amendment are expected.

7.6.4 Monkfish

This action is not expected to affect the monkfish fishery beyond the impacts described in Amendment 16.

7.7 Cumulative Effects Analysis

7.7.1 Introduction

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ) (40 CFR part 1508.7) and NOAA's agency policy and procedures for NEPA, found in NOAA Administrative Order 216-6. The purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in Framework 44 together with past, present, and reasonably foreseeable future actions that affect the groundfish environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

Valued Ecosystem Components (VEC)

As noted in section 5.0 (Description of the Affected Environment), the VECs that exist within the groundfish fishery are identified and the basis for their selection is established. Those VECs were identified as follows:

1. Regulated groundfish stocks (target and non-target);
2. Non-groundfish species (incidental catch and bycatch);
3. Endangered and other protected species;
4. Habitat, including non-fishing effects; and
5. Human Communities (includes economic and social effects on the fishery and fishing communities).

Temporal Scope of the VECs

While the effects of historical fisheries are considered, the temporal scope of past and present actions for regulated groundfish stocks, non-groundfish species, habitat and the human environment is primarily focused on actions that have taken place since implementation of the initial NE Multispecies FMP in 1977. An assessment using this timeframe demonstrates the changes to resources and the human environment that have resulted through management under the Council process and through U.S. prosecution of the fishery, rather than foreign fleets. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, this analysis examines the period between implementation of this amendment (May 1, 2010) and the anticipated rebuilding of the fishery in 2014. This date was chosen because after the fishery is rebuilt, changes to the management of groundfish that are not possible to predict at this time are likely.

Geographic Scope of the VECs

The geographic scope of the analysis of impacts to regulated groundfish stocks, non-groundfish species and habitat for this action is the total range of these VECs in the Western Atlantic Ocean, as described in the Affected Environment section of the document (section 5.0). However, the analyses of impacts presented in this amendment focuses primarily on actions related to the harvest of the managed resources. The result is a more limited geographic area used to define the core geographic scope within which the majority of harvest effort for the managed resources occurs. For endangered and protected species, the geographic range is the total range of each species (section 5.0).

Because the potential exists for far-reaching sociological or economic impacts on U.S. citizens who may not be directly involved in fishing for the managed resources, the overall geographic scope for human communities is defined as all U.S. human communities. Limitations on the availability of information needed to measure sociological and economic impacts at such a broad level necessitate the delineation of core boundaries for the human communities. Therefore, the geographic range for the human environment is defined as those primary and secondary ports bordering the range of the groundfish fishery (section 6.6) from the U.S.-Canada border to, and including, North Carolina.

Analysis of Total Cumulative Effects

A cumulative effects assessment ideally makes effect determinations based on the culmination of the following: (1) impacts from past, present and reasonably foreseeable future actions; PLUS (2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); PLUS (3) impacts from the Proposed Action and alternatives.

A description of past, present and reasonably foreseeable future actions is presented immediately below in Table 108 and more thoroughly in Appendix IV. The baseline conditions of the resources and human community are subsequently summarized although it is important to note that beyond the stocks managed under this FMP and protected species, quantitative metrics for the baseline conditions are not available. Finally, a brief summary of the impacts from the alternatives contained in this amendment is included. The culmination of all these factors is considered when making the cumulative effects assessment.

7.7.2 Past, Present and Reasonably Foreseeable Future Actions

Table 108 summarizes the combined effects of other past, present and reasonably foreseeable future actions that affect the VECs, i.e., actions other than those alternatives under development in this document (a summary of the primary past, present and reasonably foreseeable future actions effecting this amendment can be found in Appendix IV).

Note that most of the actions effecting this amendment and considered in Table 108 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management - the re-authorized Magnuson-Stevens Act. That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. More specifically, the act stipulates that management comply with a set of National Standards

that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about long-term sustainability of a given resource and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities were also considered when determining the combined effects from past, present and reasonably foreseeable future actions. Activities that have meaningful effects on the VECs include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to all of the identified VECs in the long term. Human induced non-fishing activities that affect the VECs under consideration in this document are those that tend to be concentrated in near shore areas. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities.

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Table 108 - Summary effects of past, present and reasonably foreseeable future actions on the VECs identified for Framework 44 (based on actions listed in Appendix I).

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Regulated Groundfish Stocks	Mixed Combined effects of past actions have decreased effort and improved habitat protection however, some stocks remain overfished	Positive Current regulations continue to manage for sustainable stocks	Positive Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks	Short-term Negative Several stocks are currently overfished, have overfishing occurring, or both Positive Stocks are being managed to attain rebuilt status
Non-groundfish Species	Positive Combined effects of past actions have decreased effort and improved habitat protection	Positive Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species	Positive Future actions are anticipated to continue rebuilding and thus limit the take of discards/bycatch	Positive Continued management of directed stocks will also control incidental catch/bycatch
Endangered and Other Protected Species	Positive Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	Positive Current regulations continue to control effort, thus reducing opportunities for interactions	Mixed Future regulations will likely control effort and thus protected species interactions, but as stocks improve, effort will likely increase, possibly increasing interactions	Positive Continued effort controls along with past regulations will likely help stabilize protected species interactions
Habitat	Mixed Combined effects of effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	Mixed Effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	Mixed Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase along with additional non-fishing activities	Mixed Continued fisheries management will likely control effort and thus fishery related habitat impacts but fishery and non-fishery related activities will continue to reduce habitat quality
Human Communities	Mixed Fishery resources have supported profitable industries and communities but increasing effort controls have curtailed fishing opportunities	Mixed Fishery resources continue to support communities but increasing effort controls combined with non-fishing impacts such as rising fuel costs have had a negative economic impact	Short-term Negative As effort controls are maintained or strengthened, economic impacts will be negative Long-term Positive As stocks improve, effort will likely increase which would have a positive impact	Short-term Negative Lower revenues would likely continue until stocks are fully rebuilt Long-term Positive Sustainable resources should support viable communities and economies

Impact Definitions:

-Regulated Groundfish Stocks, Non-groundfish species, Endangered and Other Protected Species: positive=actions that increase stock size and negative=actions that decrease stock size

-Habitat: positive=actions that improve or reduce disturbance of habitat and negative=actions that degrade or increase disturbance of habitat

-Human Communities: positive=actions that increase revenue and well being of fishermen and/or associated businesses
negative=actions that decrease revenue and well being of fishermen and/or associated businesses

7.7.3 Baseline Conditions for Resources and Human Communities

For the purposes of a cumulative effects assessment, the baseline conditions for resources and human communities is considered the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions. The following table (Table 109) summarizes the added effects of the condition of the VECs (i.e., status/trends from section 5.0) and the sum effect of the past, present and reasonably foreseeable future actions (from Table 108 above). The resulting CEA baseline for each VEC is exhibited in the last column (shaded). In general, straight-forward quantitative metrics of the baseline conditions are only available for the managed resources, non-target species, and protected resources. The conditions of the habitat and human communities VECs are complex and varied. As such, the reader should refer to the characterizations given in Sections 5.1 and 5.6, respectively. As mentioned above, this cumulative effects baseline is then used to assess cumulative effects of the proposed management actions below in Table 109.

Impact Definitions for Table 109 below:

Regulated Groundfish Stocks, Non-groundfish species, Endangered and Other Protected Species	Positive = actions that increase stock size
	Negative = actions that decrease stock size
Habitat	Positive = actions that improve or reduce disturbance of habitat
	Negative = actions that degrade or increase disturbance of habitat
Human Communities	Positive = actions that increase revenue and well being of fishermen and/or associated businesses
	Negative = actions that decrease revenue and well being of fishermen and/or associated businesses
All VECs	Mixed=both positive and negative

Table 109 - Cumulative effects assessment baseline conditions of the VECs

VEC		Status/Trends	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 108)	Combined CEA Baseline Conditions
Regulated Groundfish Stocks	Georges Bank Cod	Overfished and overfishing is occurring.	Negative – short term Several stocks are currently overfished, have overfishing occurring, or both; Positive – long term Stocks are being managed to attain rebuilt status	Negative – short term Overharvesting in the past contributed to several stocks being overfished or where overfishing is occurring; Positive – long term Regulatory actions taken over time have reduced fishing effort and with the addition of Amendment 16, stocks are expected to rebuild in the future
	Gulf of Maine Cod	Not overfished but overfishing is occurring.		
	Georges Bank Haddock	Not overfished and overfishing is not occurring.		
	Gulf of Maine Haddock	Not overfished and overfishing is not occurring.		
	Georges Bank Yellowtail	Overfished and overfishing is occurring.		
	SNE/Mid-Atlantic Yellowtail	Overfished and overfishing is occurring.		
	Cape Cod-Gulf of Maine Yellowtail	Overfished and overfishing is occurring.		
	American Plaice	Not overfished and overfishing is not occurring.		
	Witch Flounder	Overfished and overfishing is occurring.		
	Georges Bank Winter Flounder	Overfished and overfishing is occurring.		
	Gulf of Maine Winter Flounder	Overfished and overfishing is occurring.		
	SNE/Mid-Atlantic Winter Flounder	Overfished and overfishing is occurring.		
	Acadian Redfish	Not overfished and overfishing is not occurring.		
	White Hake	Overfished and overfishing is occurring.		
	Pollock	Not overfished but overfishing is occurring.		
	Northern Windowpane	Overfished and overfishing is occurring.		
	Southern Windowpane	Not overfished but overfishing is occurring.		
	Ocean Pout	Overfished but overfishing is not occurring.		
	Atlantic Halibut	Overfished but overfishing is not occurring.		

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Table 109 Continued

VEC		Status/Trends	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 108)	Combined CEA Baseline Conditions
Non-groundfish Species (principal species listed in section 5.1.9)	Monkfish	Not overfished and overfishing is not occurring.	Positive – Continued management of directed stocks will also control incidental catch/bycatch.	Positive – Although prior groundfish management measures likely contributed to redirecting effort onto non-groundfish species, as groundfish rebuild this pressure should lessen and all of these species are also managed through their own FMP.
	Dogfish	Not overfished and overfishing is not occurring.		
	Skates	Winter, thorny and smooth skates are overfished and thorny is also subject to overfishing. Barndoor skate is not overfished and is rebuilding toward biomass target. Little skate is not overfished, although it is close to the overfished biomass threshold. Clearence and rosette skates are not overfished and overfishing is not occurring.		
Habitat		Fishing impacts are complex and variable and typically adverse (see section 5.1.4); Non-fishing activities had historically negative but site-specific effects on habitat quality.	Mixed – Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase along with additional non-fishing activities.	Mixed - reduced habitat disturbance by fishing gear but impacts from non-fishing actions, such as global warming, could increase and have a negative impact.
Protected Resources	Sea Turtles	Leatherback, Kemp's ridley and green sea turtles are classified as endangered under the ESA and loggerhead sea turtles are classified as threatened.	Positive – reduced gear encounters through effort reductions and management actions taken under the ESA and MMPA have had a positive impact	Positive – reduced gear encounters through effort reductions and additional management actions taken under the ESA and MMPA.
	Large Cetaceans	Of the baleen whales (right, humpback, fin, blue, sei and minke whales) and sperm whales, all are protected under the MSA and with the exception of minke whales, all are listed as endangered under the ESA.		
	Small Cetaceans	Pilot whales, dolphins and harbor porpoise are all protected under the MSA. The most recent stock assessment for harbor porpoise shows that takes are increasing and nearing PBR.		
	Pinnipeds	ESA classification: Endangered, number of nesting females below sustainable level; taken by <i>Loligo</i> trawl		

Table 109 Continued

VEC	Status/Trends	Combined Effects of Past, Present Reasonably Foreseeable Future Actions (Table 108)	Combined CEA Baseline Conditions
Human Communities	Complex and variable (see Section 5.6). Although there are exceptions, generally groundfish landings have decreased for most New England states since 2001. Declines in groundfish revenues since 2001 have also occurred in all states except CT.	Negative – Although future sustainable resources should support viable communities and economies, continued effort reductions over the past several years have had negative impacts on communities	Negative – short term lower revenues would continue until stocks are sustainable Positive – long term sustainable resources should support viable communities and economies

7.7.4 Summary Effects of Framework 44 Actions

The alternatives contained in Framework 44 can be divided into two broad categories. First, this action adopts specifications for the fishery for FY 2010 - FY 2012. Second, the action adopts additional management measures for vessels that do not join sectors.

The adoption of fishery specifications for FY 2010 – FY 2012 completes actions called for by Amendment 16 in order to fulfill M-S Act requirements. Amendment 16 defined the fishing mortality targets needed to rebuild groundfish stocks and end overfishing, and adopted a complex suite of measures designed to achieve these mortality objectives. This action uses available data to translate those mortality targets into specific amounts of fish. These quantities must be defined in order to implement the ACLs and AMs called for in the amendment. The ACLs identified are thus consistent with the amendment. Other elements of this process include defining incidental catch TACs for programs using Category B DAS, allocating yellowtail flounder to the groundfish and scallop fisheries, specifying U.S./Canada TACs, and promulgating the TAC for the CAI Hook Gear Haddock SAP. In general, the adoption of all of these specifications will benefit groundfish stocks because collectively they make it more likely that mortality targets will not be exceeded. They are not likely to impact non-groundfish stocks, protected species, or habitat to any great extent when compared to the No Action alternative, since these proposed specifications differ only slightly from the No Action alternative. In almost all cases the specifications will have negative impacts on communities in the short-term as they further reduce expected landings and revenues. In the long-term however, communities should ultimately benefit from rebuilding progress.

The second broad category of measures adopted by this action is modifications to effort controls. Changes to the GOM cod and pollock trip limits, and the ability of the Regional Administrator to adjust trip limits and DAS counting in-season, are designed to reduce the likelihood that ACLs for vessels not in sectors will be exceeded. These measures are expected to have positive benefits for groundfish stocks, since if catches remain at or below the ACL it is more likely that mortality targets will be met and rebuilding efforts will be successful. Removing the yellowtail flounder trip limit for limited access scallop vessels is designed to reduce discards of this species. This will also benefit groundfish stocks, since catches can be more easily estimated from landings as opposed to discards. None of these measures are expected to appreciably affect non-groundfish stocks, protected species, or EFH. The effort control modifications are expected to have negative impacts on communities as they reduce landings in the short-term and increase uncertainty over the possibility of in-season adjustments. Requiring limited access scallop vessels to land

yellowtail flounder may provide a marginal benefit to communities from increased revenues, but the relative value of scallops and yellowtail flounder mean that any increases will be only a small portion of total trip revenue.

7.7.5 Cumulative Effects Summary

The regulatory atmosphere within which Federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of resources, habitat, and human communities. Consistent with NEPA, the M-S Act requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs (except short-term impacts to human communities) from past, present and reasonably foreseeable future actions, when combined with baseline conditions, have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the various VECs are not experiencing negative impacts, but rather that when taken as a whole and compared to the level of unsustainable effort that existed prior to and just after the fishery came under management control, the overall long-term trend is positive.

Table 110 below is provided as a summary of likely cumulative effects found in the various groups of management alternatives contained in Framework 44. Impacts are listed as no impact/neutral, positive, negative, or mixed. Impacts listed as no impact/neutral include those alternatives that have no impact or have a neutral impact (neither positive nor negative). Impacts listed as mixed contain both positive and negative impacts. The resultant cumulative effect is the CEA baseline that, as described above in Table 109, represents the sum of the past, present, and reasonably foreseeable future (identified hereafter as "other") actions and conditions of each VEC. When an alternative has a positive effect on a VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with the "other" actions that were also designed to increase stock size. In contrast, when an alternative has a negative effect on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the "other" actions. The resultant positive and negative cumulative effects are described below for each VEC and are exhibited in Table 109.

Managed Resources

The adoption of ACLs for FY 2010 – 2012, including the allocation of yellowtail flounder to the scallop fishery, the setting of U.S./Canada TACs, are expected to have positive impacts on the managed groundfish resources. These measures all increase the likelihood that mortality targets will be achieved and should continue groundfish rebuilding. The commercial fishery effort control changes (modifying GOM cod and pollock trip limits, and allowing in-season adjustments of certain effort controls) are also expected to have positive impacts as they reduce the risk that ACLs will be exceeded. Changing the trip limits may increase discards for GOM cod and pollock but the benefits of keeping catches below ACLs are expected outweigh the disadvantage of increased discards.

Non-Target Species

The adoption of fishery specifications proposed is not expected to have any impacts on non-target species. The specifications implement mortality objectives adopted in Amendment 16 and thus

are not expected to have any impacts beyond those described in that action. Modifying effort controls is not expected to impact non-target species. These changes only affect fishing by a small number of groundfish permit holders that remain in the common pool and provided rebuilding continues there is not expected to be additional impacts on non-target species.

Protected Resources

Proposed changes to fishery specifications could have varying impacts on protected species. While the setting of ACLs is not expected to have any impacts, allocating yellowtail flounder to the scallop fishery could have mixed or positive effects. In future years, these allocations could constrain scallop fishing activity if scallop vessels cannot keep bycatch to less than the allocation because excessive catches could trigger AMs. While reduced scallop fishing activity might benefit protected species such as turtles, the exact impacts could depend on how effort shifts in response to any AMs. The modifications to effort controls could also have either mixed or no impacts, depending how effort shifts in response to the changed regulations. In this case, because the changes only affect the small number of vessels expected to fish within the common pool, any impacts are expected to be minor.

Habitat, Including EFH

None of the fishery specifications measures are expected to have substantial impacts to habitat or EFH; only the allocation of yellowtail flounder may have slight beneficial impacts. Generally, the modifications to the effort controls are expected to have neutral or no impacts, since these minor changes only affect a small number of vessels that choose to fish in the common pool.

Human Communities

The specifications are expected to have long-term positive impacts on human communities as they promote stock rebuilding, but in the short-term revenues are lower than would be expected under the No Action alternative. The allocation of yellowtail flounder to the scallop fishery will have mixed impacts, as it could restrict scallop fishing activity in FY 2011 and FY 2012 but over the long term should promote stock rebuilding and make more yellowtail flounder available to all users. Specifying U.S./Canada TACs is not expected to have significant social impacts.

Changes to the commercial fishery effort control measures are expected to have negative impacts on communities. While the measures may apply to only a small number of permits that remain in the common pool, reducing trip limits for GOM cod and pollock will reduce revenues for these vessels and will increase discards, both negative factors for communities. Allowing in-season changes will also increase uncertainty over business planning and could lead to derby effects if permit holders choose to fish before any in-season changes are made.

Table 110 - Cumulative effects expected on the VECs.

Management Measure		VECs				
		Managed Resources	Non-target Species	Protected Resources	Habitat Including EFH	Human Communities
FISHERY SPECIFICATIONS AND ACLS FOR FY 2010 – FY 2012	FISHERY SPECIFICATIONS	Positive – revised specifications will guide management actions (AMs) and rebuilding using the best available science. This, combined with past management efforts, should contribute to stock rebuilding and provide positive cumulative impacts	No Impact/Neutral – provided rebuilding continues, additional impacts to non-target species are not anticipated	No Impact/Neutral – provided rebuilding continues, additional impacts to protected species are not anticipated	No Impact/Neutral – provided rebuilding continues, additional impacts to habitat are not anticipated	Positive – Overall revenues will increase as stocks rebuild however, revenues under the revised specs would be less than no action
	YELLOWTAIL FLOUNDER ALLOCATIONS FOR THE SCALLOP FISHERY	Positive - allocation of ACL to groundfish and scallop fisheries reduces likelihood yellowtail flounder mortality targets will be exceeded	No Impact/Neutral – Unlikely to have significant impacts on scallops and other non-target species	Mixed/Positive – May marginally reduce scallop dredge effort if yellowtail flounder allocation restricts fishery	No Impact/Neutral – provided rebuilding continues, additional impacts to habitat are not anticipated	Mixed – allocation may limit access to scallop and groundfish resources but long-term rebuilding benefits will be positive
	U.S./CANADA RESOURCE SHARING UNDERSTANDING TACS	Positive – specification of TACs ensures combined U.S./Canada catches of EGB cod, haddock, and GB yellowtail flounder are consistent with mortality targets	No impact/neutral – limiting catches of these stocks unlikely to affect non-target species compared to No Action	Mixed/Unknown- Specification of TACs does not appreciably change fishing effort in GB area compared to No Action	No Impact/Neutral – Specification of TACs does not appreciably change fishing effort in GB area compared to No Action	No impacts/ neutral – Measure promotes stock rebuilding, but little difference from No Action alternative.

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Management Measure		VECs				
		Managed Resources	Non-target Species	Protected Resources	Habitat Including EFH	Human Communities
COMMERCIAL FISHERY EFFORT CONTROL MODIFICATIONS	MODIFICATION OF TRIP LIMITS	Positive – reducing trip limits for GOM cod and pollock reduces risk common pool vessels will exceed their ACL; increases likelihood mortality targets will be met; but will likely increase discard rates; requiring limited access scallop vessels to land yellowtail flounder will reduce discards	No Impact/Neutral – provided rebuilding continues, additional impacts to non-target species are not anticipated	Mixed– unknown how effort may redistribute as a result of trip limit changes; only affects small number of vessels that do not fish in sectors	No Impact/Neutral – provided rebuilding continues, additional impacts to habitat are not anticipated	Negative – reduced trip limits make common pool DAS less profitable, reduces fishing opportunities
	EFFORT CONTROL MEASURE ADJUSTMENTS	Positive – Ability to make in-season adjustments provides flexibility to make it more likely mortality objectives will be achieved	No Impact – provided rebuilding continues, additional impacts to non-target species are not anticipated	No Impact/Neutral - provided rebuilding continues, additional impacts to protected species are not anticipated	No Impact/Neutral – provided rebuilding continues, additional impacts to habitat are not anticipated	Negative – possibility of in-season adjustments create additional uncertainty for planning fishing operations

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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 implements specifications for those measures that are designed in a way to maximize optimum yield to the extent practicable 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.

This action also adopts modifications to the effort control system for common pool vessels that was designed in Amendment 16. The purpose of the modifications in trip limits is to prevent overfishing by the common pool in accordance with this standard. By adjusting measures to meet mortality targets, this action will facilitate rebuilding of groundfish stocks and the harvesting of optimum yield from the fishery.

Conservation and management measures shall be based on the best scientific information available.

The proposed action is based on the most recent estimates of stock status available for each of twenty stocks included in the management unit. These estimates are in the form of information provided by the Northeast Fisheries Science Center in the GARM III proceedings. In the case of Atlantic wolffish, stock status was estimated by the NEFSC in the proceedings of the Data Poor Working Group (DPWG). For all stocks, stock size and fishing mortality in calendar year 2007 was estimated based on catch, trawl survey, observer, and other data through 2007. Management targets for this action are also based on the results of the GARM III and the DPWG, which contain a comprehensive review of fishing mortality thresholds and biomass targets for the groundfish complex.

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 proposed action manages each individual groundfish stock as a unit throughout its range. Management measures specifically designed for one stock, including ACLs and trip limits, 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 proposed management measures 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. For example, the measures designed to meet mortality targets on GOM cod have more impacts on common pool fishermen who target that stock. Some of these impacts may be localized, as often communities near the stock may have developed small boat fisheries that target it. 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 trip limits described in Section 3.2.1 and any further modification to effort controls implemented by the Regional Administrator under Section 3.2.2 could reduce the efficiency of fishing vessels. These measures are considered practicable since they allow management measures to be more selective in this multispecies fishery. By reducing the possession limits for stocks such as GOM cod or pollock, there is less of a need for overall reductions in fishing effort which allows the harvest of healthier stocks such as GB haddock. 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. As an example, measures that reduce the efficiency of fishing vessels, including trip limits and any future in-season adjustments by the RA, tend to increase the costs of fishing vessels since for a given amount of time fishing catches are reduced. These measures accomplish other goals, however, by keeping catch within mortality targets and allowing rebuilding programs to continue. The measures do not duplicate other regulatory efforts. Management of multispecies 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 ACLs and maintaining existing rebuilding programs. The expected benefits are greater in the long-term if stocks are rebuilt, though it is clear there are significant 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 proposed action will restrict fishing activity through the imposition of additional restrictions on possession limits, allowable catches, and other measures. Analyses of the impacts of these measures show that landings and revenues are likely to decline for many participants in the upcoming years of the rebuilding program. 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.

The measures allocating yellowtail flounder to the scallop fishery are expected to reduce bycatch by encouraging innovation in the scallop industry and by requiring all bycatch to be landed. While the adoption of additional trip limits may increase the ratio of discard to kept catch for GOM cod and pollock, these restrictions were adopted to discourage targeting and contribute to rebuilding objectives. 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 the benefits from those programs are expected to outweigh any increase in discards from the trip limits imposed by this action.

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 this action. 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 Proposed Action, in conjunction with

Amendment 16 measures, is the best option for achieving the necessary mortality reductions while having the least impact on vessel safety.

Some members of the public expressed concern that allowing the RA to make in-season adjustments to effort control measures could lead to a derby fishery. While the fear of a shut-down or the imposition of extremely strict regulation could lead fishermen to try and use their allocated DAS early in the season, in fact the measure is designed to have the opposite effect. The fishery should be effectively regulated throughout the season to spread effort and avoid the common pool sub-ACL being reached too early in the year.

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—

- (1) *contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;*

Foreign fishing is not allowed under this management plan or this action and so specific measures are not included that specify and control allowable foreign catch. The measures in this management plan are designed to prevent overfishing and rebuild overfished stocks. There are no international agreements that are germane to multispecies management (the U.S./Canada Resource Sharing Understanding, implemented through Amendment 13, is not considered an international agreement).

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

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 5.6.3.

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

The present biological status of the fishery is described in Section 5.2.1. Likely future conditions of the resource are described in Section 6.1.1. 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.

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

U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from this fishery as specified in Amendment 16 and Framework 44. 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.

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

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 requirement 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.

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

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.

- (7) *describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;*

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 5.1.3.

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

Scientific and research needs are not required for a framework adjustment. Current research needs are identified in Amendment 16.

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

Impacts of this framework on fishing communities directly affected by this action and adjacent areas can be found in Section 6.5.

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

Objective and measurable Status Determination Criteria for all species in the management plan are presented in Amendment 16. A full explanation of how the criteria were determined can be found in the GARM III (NEFSC 2008) and Data Poor Working Group documents (DPWG 2009).

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

A Standardized Bycatch Reporting Methodology omnibus amendment was adopted by the Council in June 2007. That methodology applies to this framework. The measure allocating yellowtail flounder allocation to the scallop fishery is expected to reduce bycatch by requiring all bycatch to be landed. The GOM cod and pollock trip limits may increase bycatch, but are a selective means available to meet mortality targets and continue rebuilding plans.

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

This management plan does not include a catch and release recreational fishery management program and thus does not address this requirement.

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

As noted above, the description of the commercial, recreational, and charter fishing sectors was fully developed in Amendment 16, and is summarized in this document (Section 5.6.1).

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

This proposed action does not allocate harvest restrictions or stock benefits to the fishery. Such allocations were adopted in Amendment 16, while this action implements catch limits for all stocks within the existing allocation structure.

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

Annual Catch Limits specifications are adopted in this action. The ACL process was described in Amendment 16. Specifications were developed in a way to ensure that overfishing does not occur in accordance with Amendment 16 and all relevant laws.

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 to initiate EFH consultation with the National Marine Fisheries Service.

8.1.3.1 Description of Action

The purpose of the Framework 44 (Northeast Multispecies FMP) Proposed Action is to implement specifications for the fishery and to adopt management measures that are necessary to achieve the fishing mortality targets required by Amendment 16.

In general, the activity described by this Proposed Action, fishing for groundfish species, occurs off the New England and Mid-Atlantic coasts within the U.S. EEZ. Thus, the range of this activity occurs across the designated EFH of all Council-managed species (see Amendment 11 to the Northeast Multispecies FMP for a list of species for which EFH was designated, the maps of the distribution of EFH, and descriptions of the characteristics that comprise the EFH). 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.

The Proposed Action is described in 3.0. The Proposed Action includes the following general measures:

- Measures to implement ACL specifications for FY 2010-2012
- Commercial fishery effort control modification measures

A list of specific measures and a summary of the habitat impacts of the proposed measures is found in 6.2.1 and Table 86..

It is not possible at this time to assess some of the proposed measures (mortality objectives incidental Catch TACs, commercial fishing measures trip limits, special management programs DAS leasing and special management programs haddock separator trawl or other authorized gear performance incentives. Other proposed measures not mentioned above are not expected to affect EFH as they are either administrative in nature or are expected to have neutral or no habitat impacts.

8.1.3.2 Assessing the Potential Adverse Impacts

Refer to the Habitat Impacts of the Proposed Action (Section 6.2.1, and Table 86 for a tabular look at the summary impacts of the proposed measures. Nearly all measures are expected to have neutral impacts on habitat.

Measures with Potential Negative Effects on EFH

There are no measures with potential negative effects on EFH.

Measures with Potential Positive Effects on EFH

Table 111 – Expected Positive Habitat Impacts of Proposed Action Relative to No Action Alternative

Proposed Measure	Expected Relative Habitat Impacts	Rationale
Allocation of yellowtail flounder to the scallop and groundfish fisheries	+/0	May result in slightly less scallop dredge effort in FY 2011 – 2012 as compared to No Action, and slightly lower groundfish fishing effort. No significant impacts on EFH expected.

8.1.3.3 Minimizing or Mitigating Adverse Impacts

Section 6.2.1 (habitat impacts of Proposed Action) demonstrates that the overall habitat impacts of all the measures combined in this action have neutral impacts relative to the baseline habitat protections established under Amendment 13 to the Northeast Multispecies FMP. As such, additional measures to mitigate or minimize adverse effects of the multispecies fishery on EFH beyond those established under Amendment 13 are not necessary.

8.1.3.4 Conclusions

Because there are no adverse impacts associated with this action, no EFH consultation is required.

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

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b) and NAO 216-6 §5.04b.1. They are included in this document as follows:

- The need for this action is described in section 2.6;
- The alternatives that were considered are described in sections 3.0 (Proposed Action) and 4.0 (alternatives to the Proposed Action);
- The environmental impacts of the Proposed Action are described in section 6.0;
- The agencies and persons consulted on this action are listed in section 7.2.4.

While not required for the preparation of an EA, this document includes the following additional sections that are based on requirements for an Environmental Impact Statement (EIS).

- An Executive Summary can be found in section 1.0.
- A table of contents can be found in section 2.1.
- Background and purpose are described in section 0.
- A summary of the document can be found in section 1.0.
- A brief description of the affected environment is in section 4.0.
- Cumulative impacts of the Proposed Action are described in section 6.7.
- A determination of significance is in section 7.2.2.
- A list of preparers is in section 7.2.3.
- The index is in section 8.3.

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 Proposed Action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?

Response: This action cannot be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action. Analysis of the proposed measures in section 6.1 indicates that fishing mortality on almost all groundfish stocks will decline as a result of the Proposed Action. Further, indications are that stock size for all stocks should increase between 2010 and 2012 as a result of the

measures, helping to keep these stocks on the rebuilding trajectories adopted by Amendments 13 and 16. None of the measures are expected to have a large impact on habitat that could threaten the sustainability of any target resource.

(2) Can the Proposed Action reasonably be expected to jeopardize the sustainability of any non-target species?

Response: This action cannot be reasonable expected to jeopardize the sustainability of any non-target species that may be affected by the action. The proposed measures will set relatively low ACLs and implement trip limits that should reduce interactions between groundfish fishing vessels and other species. There are no indications that groundfish fishing activity is currently jeopardizing the sustainability of non-target species.

(3) Can the Proposed Action 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: The Proposed Action cannot be reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identifies in the FMP. As discussed in section 7.1.3, the proposed measures are expected to have neutral to beneficial impacts on habitat since they include additional reductions in fishing effort.

(4) Can the Proposed Action be reasonably expected to have a substantial adverse impact on public health or safety?

Response: Nothing in the Proposed Action can be reasonable expected to have a substantial adverse impact on public health or safety. Measures adopted in Amendment 16 were designed to improve safety in spite of low ACLs anticipated by this action. 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. This action also implements trip limits, which do not have safety implications and, unlike the differential DAS effort control measure that was considered but not adopted, do not raise concerns about causing effort to shift offshore. The Proposed Action, in conjunction with Amendment 16 measures, is the best option for achieving the necessary mortality reductions while having the least impact on vessel safety.

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

Response: The Proposed Action cannot be reasonably expected to adversely affect endangered or threatened species. As discussed in section 6.3, these species are expected to benefit from the reductions in fishing effort that are proposed by this action.

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

Response: The Proposed Action is not expected to have a substantial impact on biodiversity and/or ecosystem function with the affected area. The use of ACLs will tightly control catches of target and incidental regulated groundfish stocks. Catches of target and incidental catch species under this program will be consistent with the mortality targets of Amendment 16, and thus will not have a substantial impact on predator-prey relationships or biodiversity. Particular measures within this action will have no more

than minimal adverse impacts to EFH and that the overall impact to EFH will be positive. It is therefore reasonable to expect that there will not be substantial impact on biodiversity or ecosystem function.

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

Response: The environmental assessment documents that no significant natural or physical effects will result from the implementation of the Proposed Action. The Proposed Action is designed to implement specifications to continue the groundfish rebuilding programs that were implemented as a result of Amendments 13 and 16 to the Northeast Multispecies FMP. As described in section 3.1.1, the action is expected to continue the rebuilding trajectories for most stocks that have been adopted. The action cannot be reasonably expected to have a substantial impact on habitat or protected species, as the impacts are expected to fall within the range of those resulting from Amendment 16. The action's potential social and economic impacts are also addressed in the environmental assessment (see sections 6.5 and 6.4, respectively) and more specifically in the Executive Order 12866 review (section 7.11.1) and the Initial Regulatory Impact Review (section 7.11.2).

NMFS has determined that despite the potential socio-economic impacts resulting from this action, there is no need to prepare an EIS. The purpose of NEPA is to protect the environment by requiring Federal agencies to consider the impacts of their Proposed Action on the human environment, defined as "the natural and physical environment and the relationship of the people with that environment." The EA for Framework 44 describes and analyzes the proposed measures and alternatives and concludes there will be no significant impacts to the natural and physical environment. While some fishermen, shore-side businesses and others may experience impacts to their livelihood, these impacts in and of themselves do not require the preparation of an EIS, as supported by NEPA's implementing regulations at 40 C.F.R. 1508.14. Consequently, because the EA demonstrates that the action's potential natural and physical impacts are not significant, the execution of a FONSI remains appropriate under criteria 7.

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

Response: The effects of the proposed measures on the quality of human environment are not expected to be highly controversial. The need to rebuild groundfish stocks is well-documented. While there has been some debate over how quickly to rebuild those stocks and the desired biomass for each stock, legal requirements established by the M-S Act render these discussions moot. These issues were also resolved with the adoption of Amendment 16, and this action does not modify those rebuilding plans.

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

Response: No, the Proposed Action cannot be reasonably expected to result in substantial impacts to unique areas or ecological critical areas. The only designated HAPC in the areas affected by this action is protected by an existing closed area that would not be affected by this action. In addition, vessel operations around the unique historical and cultural resources encompassed by the Stellwagen Bank National Marine Sanctuary would not likely be altered by this action. As a result, no substantial impacts are expected from this action.

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

Response: The Proposed Action is not expected to result in highly uncertain effects on the human environment or involve unique or unknown risks. The effort control measures used in this action are similar to those adopted in past management actions, and these prior actions have reduced fishing mortality on many stocks and initiated stock rebuilding. The specifications were anticipated by Amendment 16 and results of the GARM III. While there is a degree of uncertainty over how fishermen will react to the proposed measures, the analytic tools used to evaluate the measures attempt to take that uncertainty into account and reflect the likely results as a range of possible outcomes. For example, the economic analysis in section 6.4 illustrates the distribution of results that are expected rather than provide only a point estimate. The greatest uncertainty associated with the analyses is the number of permits that will belong with sectors when this action is implemented. The analyses address several scenarios for membership, and since ultimately the availability of a choice of whether to join a sector will serve to mitigate social and economic impacts, this uncertainty cannot be seen as a significant source of risk. Overall, the impacts of the Proposed Action can be, and are, described with a relative amount of certainty.

(11) Is the Proposed Action related to other actions with individually insignificant, but cumulatively significant impacts?

Response: The Proposed Action is not related to other actions with individually insignificant but cumulatively significant impacts. Recent management actions in this fishery include FW 42, FW 43, and Amendment 16. FW 42 developed specific measures implementing programs adopted by Amendment 13 (including some extended or renewed by this action); each was determined to be insignificant. FW 43 adopted limits on groundfish bycatch by mid-water trawl herring vessels and was not determined to have a significant effect on either the groundfish or herring fisheries. Amendment 16 had significant impacts and thus required the preparation of an EIS. The measures in this action were anticipated by Amendment 16 and thus cannot be said to have different cumulative impacts that were not foreseen and addressed in the amendment. Therefore, the Proposed Action, when assessed in conjunction with the framework actions noted above, would not have significant impacts on the natural or physical environment.

(12) Is the Proposed Action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?

Response: The Proposed Action is not likely to affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural, or historical resources. The only object in the fishery area that is listed in the National Register of Historic Places is the wreck of the steamship *Portland* within the Stellwagen Bank National Marine Sanctuary. The current regulations allow fishing within the Stellwagen Bank National Marine Sanctuary. The Proposed Action would not regulate current fishing practices within the sanctuary. However, vessels typically avoid fishing near the wreck to avoid tangling gear on the wreck. Therefore, this action would not result in any adverse affects to the wreck of the *Portland*.

(13) Can the Proposed Action reasonably be expected to result in the introduction or spread of a non-indigenous species?

Response: This action would not result in the introduction or spread of any non-indigenous species, as it would not result in any vessel activity outside of the Northeast region.

(14) Is the Proposed Action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

Response: No, the Proposed Action is not likely to establish precedent for future actions with significant effects. The Proposed Action adopts specifications and other measures that are designed to react to the necessity to reduce fishing mortality for several groundfish stocks in order to achieve the fishing mortality targets adopted by Amendment 16. As such, these measures are designed to address a specific problem and are not intended to represent a decision about future management actions that may adopt different measures.

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

Response: The Proposed Action is intended to implement measures that would offer further protection of marine resources and would not threaten a violation of Federal, state, or local law or requirements to protect the environment. In fact, this action was developed in order to implement several new requirements of the law.

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

Response: As specified in the responses to the first two criteria of this section, the proposed action is not expected to result in cumulative adverse effects that would have a substantial effect on target or non-target species. This action would reduce fishing mortality for several groundfish stocks, with indirect reduction in mortality for non-target and non-groundfish stocks.

FONSI STATEMENT: In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for Framework Adjustment 44 to the Northeast Multispecies Fishery Management Plan, it is hereby determined that Framework Adjustment 44 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 Proposed Action was developed during the period September 2009 through November 2009 and was discussed at the following meetings. Opportunities for public comment were provided at each of these meetings.

NEFMC Council	Radisson Hotel, Plymouth MA	9/23/2009
Groundfish PDT	Holiday Inn, Mansfield MA	10/29/2009
Groundfish Oversight	Sheraton Ferncroft, Danvers MA	11/5/2009
NEFMC Council	Hyatt Goat Island, Newport RI	11/18/2009

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 44.

For further information on the potential impacts of the fishery and the proposed management action on listed species, see section 6.3 of this document.

8.4 Marine Mammal Protection Act

The NEFMC has reviewed the impacts of the Proposed Action 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 6.3 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 44, 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.

8.6 Administrative Procedure Act

This action was developed in compliance with the requirements of the Administrative Procedures 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 Proposed Action, the measures proposed, and the impacts of those measures. A discussion of the reasons for selecting the Proposed Action is included so that intended users may have a full understanding of the Proposed Action and its implications.

Until a proposed rule is prepared and published, this document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of this document and the decisions made by the Council to propose this action are the result of a multi-stage public process. Thus, the information pertaining to management measures contained in this document has been improved based on comments from the public, the fishing industry, members of the Council, and NOAA Fisheries Service.

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 Groundfish Assessment Review Meeting III (GARM III; NEFSC 2008) and the Northeast Data Poor Stocks Working Group (DPWG 2009), which both 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 Proposed Action were conducted using information from the most recent complete calendar years, through 2008, and in some cases includes information that was collected during the first nine months of calendar year 2009. Complete data were not available for calendar year 2009. 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 sections 3.0 and 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 6.0 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 44. 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 44 continues 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
- 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 7.11 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.

The following discussion is limited to a determination of significance of the proposed action based solely on economic criteria. The proposed action contains three components. First, ACLs for all stocks are specified consistent with Amendment 16 requirements. Second, effective in 2011 a sub-ACL of yellowtail flounder will be made to the commercial scallop fishery. Last, this action would make adjustments to the commercial fishery effort control measures. Note that this action would also set FY2010 TACs for the US/Canada resource sharing understanding. However, since these TACs are subsumed in the setting of the overall ACLs the impacts of the US/CA TACs are not discussed separately herein. A more detailed treatment of the economic impacts of these individual measures is provided in Section 6.4.1. The following summarizes these findings and provides an estimate of annual economic impact for the proposed action as a whole.

8.11.1.1 Summary of Impacts on Fishing Revenue

ACL Specifications – The proposed action would set ACLs for each groundfish stock consistent with Amendment 16 procedures. Assuming the combined ACLs could, in fact, be landed the potential revenue during 2010 was estimated to be nearly \$190 million increasing to \$196 million in 2012. Given the mixed species nature of the groundfish fishery and the need to achieve conservation objectives for all stocks it is unlikely that realized revenues would be this high. Indeed, recent experience suggests the opposite. Neither of the two original sectors have ever harvested their full allocation of GB cod; the combined common pool and sector vessels have never harvested the available GB haddock or redfish; and catches of many other stocks have been less than the target TACs in recent years. Depending on discard rates and the extent to which sectors are able to adjust fishing practices the estimated potential groundfish revenue in 2010 ranges from \$63.0 million to \$87.2 million or more. Thus, compared to groundfish revenues during 2007 and 2008 of \$85 million potential revenues during 2010 could equal or exceed recent levels of groundfish revenue. Potential revenues during 2011 and 2012 are expected to increase in each year ranging from \$69.2 million to \$96.1 million during 2011 and from \$70.2 million to \$97.4 million during 2012.

Yellowtail Flounder Allocation to the Scallop Fishery – This action would adopt a sub-ACL for SNE/MA and GB yellowtail flounder for the scallop fishery effective in FY2011. The sub-ACL would be set at 90% of the expected yellowtail flounder bycatch in the scallop fishery. Creating the sub-ACL creates an opportunity to assert management control over more sources of yellowtail flounder fishing mortality, but in order to do so must reduce the ACL allocated to the commercial groundfish fishery. Furthermore, allocating only 90% of the expected catch to the scallop fishery creates the possibility that an accountability measure will be triggered that could result in revenue losses in the scallop fishery. The

economic impacts of this action are uncertain (see Section 7.4.1.1.1.1) since the accountability measure for the scallop fishery has yet to be decided, and given lower ACLs may provide incentives to change fishing practices in both the scallop and groundfish fisheries that would reduce yellowtail flounder catch rates mitigating the effects of lowering the ACL. However, assuming an in-season AM is selected for the scallop fishery and no change in fishing practices the potential loss in scallop revenue could be \$35 million during 2011 and \$36 million during 2012. Since the scallop fishery sub-ACL would require a deduction in the commercial groundfish ACL there would be potential revenue losses in the groundfish fishery as well. These revenue losses were estimated to be approximately \$2.6 million during 2011 and \$4.0 million during 2012.

Modification of Trip Limits – The proposed action would modify the effort control measures proposed under A16. Specifically, the GOM cod trip limit would remain at current levels and a pollock trip limit would be set at 1,000 pounds per DAS up to a maximum of 10,000 pounds. These changes affect the expected impact of the fishing conditions that common pool vessels will fish under during FY2010. The effects of the A16 effort control measures as modified by the proposed action were estimated by comparing fishing trips revenues during FY2007 to revenues that may be expected to be realized if these trips were taken during FY2010. That analysis found that fishing revenues may decline by about \$5 million or which \$2.9 million would be reduced revenue from groundfish and the remainder would be forgone revenues from other species that are typically landed while fishing for groundfish. This estimate may be offset by DAS leasing, however, the number of DAS allocated to the common pool as a whole are less than what may be needed.

Combined Economic Impacts – The proposed action would affect the groundfish fishery during FY2010-FY2012 and would affect the scallop fishery during FY2011 and FY2012. Note that the proposed action is limited to a 3-year time frame because all ACLs may be adjusted every other year according to Amendment 16 scheduling. During 2010 reductions in common pool revenues were estimated to be \$5 million. Based on an estimate of \$85 million in groundfish revenues during FY2008 the impacts from the setting of groundfish ACLs ranged from \$63 million to \$87 million; an impact ranging from a reduction of \$22 million to a potential increase of \$2 million. Adding these changes in potential revenue to the estimated common pool impacts results in a range estimate of \$27 to \$3 million in lost fishing revenue during 2010.

During FY 2011 an ACL will be set for yellowtail flounder in the scallop fishery in addition to the ACLs established for groundfish. Since at least a portion of the commercial ACL will be allocated to the common pool as these ACLs increase the potential revenue available to the common pool will also increase. For this reason potential common pool revenues will be assumed to be subsumed in the setting of ACLs. During 2011 the ACL set for yellowtail flounder was estimated to result in a combined loss of \$38 million of which \$35 million would be a reduction in scallop revenues. The potential estimated revenue from groundfish ACLs ranged from \$69.2 million to \$96.1 million. Thus, once again using 2008 groundfish revenue as a basis for comparison, the economic impacts during FY 2011 range between reductions of \$53.8 million and \$26.9 million in combined fishing revenue. During FY2012, impacts associated with the yellowtail flounder ACL were estimated to be \$40 million in combined scallop and groundfish revenue. Estimated potential revenue from the FY 2012 commercial groundfish ACL ranged between \$70.2 million and \$97.4 million. Once again using 2008 groundfish revenue as a basis for comparison, the economic impacts during FY2012 range between a reduction in combined fishing revenue of \$54.8 million to \$27.6 million.

As noted previously, the estimates of impacts particularly that of the impact on the scallop fishery of setting a yellowtail flounder sub-ACL and the potential revenues for ACL specifications are uncertain. Given changes in groundfish management providing greater incentives to fish more selectively suggests

that potential groundfish revenues could be substantially higher than estimated. Similarly, the yellowtail flounder sub-ACL may provide the incentive for scallop vessels to reduce yellowtail founder bycatch which would also reduce forgone scallop revenue. Nevertheless, in spite of the likelihood that the economic impacts of these proposed measures may be overestimated the quantified impacts were no more than \$55.8 million in any year. Therefore, the estimated economic impacts of the Proposed Action are not expected to exceed \$100 million on an annual basis.

8.11.1.2 Determination of Significance

The Proposed Action would have an adverse impact on fishing vessels, purchasers of seafood products, ports, recreational anglers, and operators of party/charter businesses. The total quantified impact on the National or regional economy was not expected to exceed \$55.8 million on an annual basis. This impact may be offset by adaptations to the Proposed Action or by increased sector membership. Further, economic impacts are expected to be lessened over time with increasing ACLs as groundfish stocks rebuild. The estimated economic impacts are will not exceed the \$100 million threshold and thus the Proposed Action is not determined to be significant under the Executive Order.

8.11.2 Regulatory Flexibility Act

The purpose of the RFA is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the RFA requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. To this end, this document contains an IRFA in this section which includes an assessment of the effects that the Proposed Action and other alternatives are expected to have on small entities.

The proposed action would set ACLs for groundfish stocks for 2010, 2011, and 2012, set a sub-ACL for yellowtail flounder for the scallop fishery effective in 2011, and modify the common pool effort control measures for 2010. These measures would affect regulated entities engaged in commercial fishing for scallops and groundfish. Sub-ACLs will also be set for the recreational catches of GOM cod and GOM haddock and would affect regulated entities engaged in the party/charter industry. The size standard for commercial fishing (NAICS code 114111) is \$4 million in sales while the size standard for party/charter operators (part of NAICS code 487210) is \$7 million. Although multiple vessels may be owned by a single owner available tracking of ownership is not readily available to reliably ascertain affiliated entities. Therefore, for purposes of analysis each permitted vessel is treated as a single small entity.

During FY 2008 (the most recent complete fishing year) 2,732 vessels were issued a scallop and/or a groundfish permit. Of these vessels 1,867 were issued only a groundfish permit, 500 were only issued a scallop permit and 365 were issued both a scallop and a groundfish permit. Note that the latter include vessels that have a limited access scallop and a limited access Category E groundfish permit as well as vessels that hold some combination of a party/charter permit and a limited access scallop permit or a general category permit. Among groundfish permit holders 1,472 held a limited access permit and 760 held an open access party/charter permit.

Based on FY 2008 activity there were 1,267 of the 2,732 vessels with either a commercial scallop or groundfish permit that participated in the scallop or groundfish fishery. Median gross sales for these vessels were \$186 thousand and sales by any no one entity did not exceed \$4 million. Based on FY2008 logbook data there were 143 of the 760 permitted party/charter vessels that participated in the GOM recreational groundfish fishery where either GOM haddock or GOM cod were retained. The total number of passengers carried by any one of these regulated party/charter operators did not exceed 11,000. At an

average passenger fee of approximately \$65 per passenger none of the participating party/charter businesses would exceed \$7 million in sales. Therefore, all 1,410 of the participating commercial and recreational for-hire vessels are considered small regulated entities under the RFA.

8.11.2.1 Economic Impacts of the Proposed Action

A more detailed treatment of economic impacts may be found in Section 7.4. As noted in Section 7.4 and emphasized herein the economic impacts of the ACLs set for the commercial groundfish fishery are uncertain and indeterminate for any given vessel since the economic impacts depend on whether the vessel owner chooses to enroll in a sector or remain in the common pool. Sectors offer relief from certain regulations while being limited to a quota on catch. The former provides opportunities to improve economic efficiency while the latter places a premium on managing available quota for multiple species to maximize the value of catch. This will likely require changes in fishing practices including where, when, and how fishing operations are conducted. Groundfish revenues during both 2007 and 2008 were approximately \$85 million. Given 2010 ACLs, at 2008 prices the available potential revenue would be \$190 million assuming no discarding and the available ACL for all stocks can be harvested. Realizing revenues of this magnitude is unlikely since some level of discarding is likely and available ACL for some species may constrain the ability to harvest the full ACL of others. If no changes are made in discarding or selectivity, groundfish revenues may be expected to decline to \$63 million. However, improvements in selectivity particularly while fishing for GB haddock which comprises nearly half of the aggregate groundfish ACL could lead to substantially higher revenues. If, for example, selectivity could be improved by 50% over 2007-2008 averages groundfish revenues would be an estimated \$87 million.

Even if fishing revenues do not improve vessel owners that enroll in sectors may still find themselves in a more favorable financial position since sectors offer the opportunity for pooling of quota across fishing platforms. For individuals that own multiple vessels this allows them to shed redundant capital thereby reducing fixed costs. Operating costs may also be reduced since fishing will likely be moved to an owner's most efficient vessel and through regulatory exemptions granted to each sector.

Economic impacts on vessels that do not enroll in a sector are uncertain although the common pool measures have been designed to stay within the combined ACL that will be allocated to the common pool as a whole. The economic impact of these measures was estimated by applying the common pool measures adopted under A16 as modified by this proposed action to FY2007 activity. As of September 1, there were 723 permits that had enrolled in a sector and 757 that had not. The latter includes a large number of vessels that have not been active in the groundfish fishery. In fact, only 279 of the common pool vessels had any Category A DAS that would enable them to participate in the groundfish fishery. Of these 279, only 113 were found to have participated in the groundfish fishery. These vessels had aggregate gross sales of \$24.8 million (an average of \$219.5 thousand per vessel) of which nearly 30% was derived from sales on trips where groundfish were landed. The combined effect of the A16/FW44 measures was estimated to reduce total sales by \$5.1 million or an average of \$45.1 thousand per vessel or 20.1%. These economic impacts may be offset by DAS leasing. However, converting 2007 activity into 24-hour increments, the total DAS needed to fish at 2007 levels (3,769 DAS) exceeds that of the total DAS that will be allocated to the common pool (3,600). The ability to find trading partners may also be limited by the restrictions on trading among vessels within specified baseline length and horsepower characteristics.

The economic impact of the yellowtail flounder sub-ACL that will become effective in 2011 is uncertain. This sub-ACL would have a potential impact on both groundfish and scallop vessels. However, as was the case for the setting groundfish ACLs the impact is indeterminate on any given vessel since the AM for

the scallop fleet has yet to be determined and setting an ACL may engender changes in fishing strategies to avoid foregone revenues that may be associated with exceeding the ACL. Assuming an in-season AM is selected and no change in fishing patterns by either groundfish or scallop vessels, an upper bound estimate is a loss of \$35 million and \$2.6 million in scallop and groundfish revenue respectively, during 2011 and \$36 million and \$4 million during 2012. These values represent about 6% of the likely scallop ACLs that will be set for 2011 and 2012 and about 5% or less of groundfish revenue depending on factors noted above affecting realized groundfish revenue.

The economic impact of specification of the U.S./Canada TACs are difficult to predict due to the many factors that may affect the level of catch, however it is likely that due to the substantially reduced FY 2010 TACs for Eastern GB cod and GB yellowtail flounder (compared to FY 2009), the Proposed Alternative would result in reduced overall revenue from the U.S./Canada Management Area. The amount of fish landed and sold will not be equal to the sum of the TACs, but will be reduced as a result of discards, and may be further reduced by limitations on access to stocks that may result from the associated fishing rules. Reductions to the value of the fish may result from fishing derby behavior and potential impact on markets. The revenue from the sale of the three transboundary stocks may be up to 22% less than such revenue in FY 2008. It is possible that total revenue may be reduced by up to 30 percent from 2009 revenues. It should be noted that the amount of haddock that has been harvested from the U.S./Canada Area has been increasing, but it is unknown whether this trend will continue.

The proposed action would provide the Regional Administrator authority to implement trip limits or differential DAS counting in-season in order to prevent ACLs from being exceeded or to facilitate the harvesting of ACLs. Because this authority may result in either less or more fishing effort, it may either result in short term increases or decreases in revenue. The Regional Administrator authority would contribute to long term increases in revenue by optimizing catch levels to align with catch targets and facilitate stock rebuilding.

The proposed action makes no changes to the recreational measures that would be implemented as part of Amendment 16. Those measures would add two weeks to the GOM cod closed season and would reduce the size limit on GOM haddock from 19 to 18-inches. This means that passenger demand may be expected to respond to these regulatory changes and may not be expected to be affected by the setting of any particular recreational sub-ACL. However, since exceeding a recreational sub-ACL would trigger an AM the economic impacts on recreational party/charter vessels would be associated with the likelihood that harvest levels would trigger an AM.

According to GARM III estimates of landings, GOM cod harvest by all recreation modes ranged between 1,960 mt and 953 mt during 2004 to 2007. The GOM cod recreational sub-ACL will be 2,673 mt, 2,824 mt, and 2,826 mt during 2010, 2011, and 2012 respectively. Since harvest levels of GOM cod by the recreational sector including party/charter operators has been below the recreational sub-ACL for GOM cod an AM would not be expected to be triggered. For this reason the GOM cod sub-ACL is would not expected to have an economic impact on party/charter vessels. By contrast, recreational harvest of GOM haddock ranged between 430 mt and 717 mt during 2004-2007 whereas the recreational sub-ACL for GOM haddock will be declining from 324 mt during 2010 to 259 mt during 2012. This means that the recreational GOM haddock ACL will be about 57% of the average 2004-2007 average harvest. In the absence of avoidance behavior the GOM haddock sub-ACL may be expected to be exceeded triggering an AM. The impact of triggering a GOM haddock AM on party/charter vessels is uncertain. Available data suggest substitutability between cod and haddock on party/charter trips so the fact that the GOM cod recreational sub-ACL may not be constraining, some switching between haddock and cod on GOM party/charter trips may be anticipated. The economic impact on party/charter operators will depend on the selected AM and the relative strength of angler preference between cod and haddock. If the AM is a

seasonal closure then the economic impact would be a loss in trips that could be taken during the closure. These trips may not be recovered given the seasonal nature of recreational passenger demand. If the GOM haddock AM is a change in the bag or size limit and cod may easily be substituted for haddock then passenger demand may be expected to be largely unchanged and the economic impact on party/charter vessels may be relatively low.

8.11.2.2 Economic Impact of Alternatives to the Proposed Action

Under the No Action Alternative, although ACLs would be specified, there would be no allocation made to the scallop fishery, and no U.S./Canada TACs would be specified. Under the No Action Alternative, the common pool management measure would be the same as those proposed by Amendment 16, and the Regional Administrator would not have additional authority to implement in-season trip limits or differential DAS requirements in order to prevent ACLs from being exceeded.

Because under the No Action Alternative the ACL is higher than that set by the Proposed Action, potential groundfish fishery revenues would also be higher. Also as a result of not making a yellowtail flounder allocation to the scallop fishery would not impact scallop revenues in FY 2010 because the scallop ACL sub-component would not constrain the scallop fishery in FY 2010. No allocation of yellowtail to the scallop fishery in FY 2010 would however result in additional revenue for the groundfish fishery (the revenue associated with 110 mt and 111 mt of GB and SNE/MA yellowtail flounder, respectively). Under the No Action Alternative, no specification of the U.S./Canada TACs would result in increased revenue from the U.S./Canada Area in the short term, but would undermine rebuilding of GB cod and yellowtail flounder, and would likely result in long term reductions in revenue.

As a result of not making a yellowtail flounder allocation in FY 2011 and 2012, scallop and groundfish fishing revenues would likely be higher than anticipated under the Proposed Action. If an allocation is not made then the scallop catches would not be constrained by yellowtail flounder. In FY 2011 and 2012, the overall limit on yellowtail flounder catch may reduce scallop fishery revenues by \$ 35 million and \$ 36 million, respectively. With respect to groundfish revenue, the upper bounds for the difference between the No Action Alternative and the Proposed Alternative for FYs 2011 and 2012 are \$ 2.6 million and \$ 4 million, respectively. Not specifying the U.S./Canada TACs could result in increased revenues for groundfish fishermen, however, not specifying TACs is likely to increase the risk of overfishing the transboundary stocks and long-term declines in landings and revenues.

The No Action Alternative would neither implement more restrictive trip limits for GOM cod and pollock, nor provide the Regional Administrator the authority to implement in-season effort controls (trip limits or differential DAS counting). As such the economic impacts of the No Action Alternative would not differ from those described in Amendment 16. There is the possibility that under the No Action Alternative there would be a lower likelihood of derby fisheries occurring and increased ability for vessel owners to plan, than under the Proposed Alternative and therefore greater economic stability, due to the fact that in-season changes to the regulations would not occur (except in the U.S./Canada Management Area).

9.0 REFERENCES

9.1 Glossary

Adult stage: One of several marked phases or periods in the development and growth of many animals. In vertebrates, the life history stage where the animal is capable of reproducing, as opposed to the juvenile stage.

Adverse effect: Any impact that reduces quality and/or quantity of EFH. May include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include sites-specific or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

Aggregation: A group of animals or plants occurring together in a particular location or region.

Anadromous species: fish that spawn in fresh or estuarine waters and migrate to ocean waters

Amphipods: A small crustacean of the order Amphipoda, such as the beach flea, having a laterally compressed body with no carapace.

Anaerobic sediment: Sediment characterized by the absence of free oxygen.

Anemones: Any of numerous flowerlike marine coelenterates of the class Anthozoa, having a flexible cylindrical body and tentacles surrounding a central mouth.

Annual Catch Entitlement (ACE): Pounds of available catch that can be harvested by a particular sector. Based on the total PSC for the permits that join the sector.

Annual total mortality: Rate of death expressed as the fraction of a cohort dying over a period compared to the number alive at the beginning of the period ($\# \text{ total deaths during year} / \text{numbers alive at the beginning of the year}$). Optimists convert death rates into annual survival rate using the relationship $S=1-A$.

ASPIC (A Surplus Production Model Incorporating Covariates): A non-equilibrium surplus production model developed by Prager (1995). ASPIC was frequently used by the Overfishing Definition Panel to define B_{MSY} and F_{MSY} reference points. The model output was also used to estimate rebuilding timeframes for the Amendment 9 control rules.

Bay: An inlet of the sea or other body of water usually smaller than a gulf; a small body of water set off from the main body; e.g. Ipswich Bay in the Gulf of Maine.

Benthic community: *Benthic* means the bottom habitat of the ocean, and can mean anything as shallow as a salt marsh or the intertidal zone, to areas of the bottom that are several miles deep in the ocean. *Benthic community* refers to those organisms that live in and on the bottom. (*In* meaning they live within the substrate; e.g., within the sand or mud found on the bottom. See *Benthic infauna*, below)

Benthic infauna: See *Benthic community*, above. Those organisms that live *in* the bottom sediments (sand, mud, gravel, etc.) of the ocean. As opposed to *benthic epifauna*, that live *on* the surface of the bottom sediments.

Benthivore: Usually refers to fish that feed on benthic or bottom dwelling organisms.

Berm: A narrow ledge typically at the top or bottom of a slope; e.g. a berm paralleling the shoreline caused by wave action on a sloping beach; also an elongated mound or wall of earth.

Biogenic habitats: Ocean habitats whose physical structure is created or produced by the animals themselves; e.g., coral reefs.

Biomass: The total mass of living matter in a given unit area or the weight of a fish stock or portion thereof. Biomass can be listed for beginning of year (Jan-1), Mid-Year, or mean (average during the entire year). In addition, biomass can be listed by age group (numbers at age * average weight at age) or summarized by groupings (e.g., age 1⁺, ages 4+ 5, etc). See also spawning stock biomass, exploitable biomass, and mean biomass.

B_{MSY}: The stock biomass that would produce MSY when fished at a fishing mortality rate equal to F_{MSY}. For most stocks, B_{MSY} is about ½ of the carrying capacity. The proposed overfishing definition control rules call for action when biomass is below ¼ or ½ B_{MSY}, depending on the species.

B_{threshold}: 1) A limit reference point for biomass that defines an unacceptably low biomass i.e., puts a stock at high risk (recruitment failure, depensation, collapse, reduced long term yields, etc). 2) A biomass threshold that the SFA requires for defining when a stock is overfished. A stock is overfished if its biomass is below B_{threshold}. A determination of overfished triggers the SFA requirement for a rebuilding plan to achieve B_{target} as soon as possible, usually not to exceed 10 years except certain requirements are met. In Amendment 9 control rules, B_{threshold} is often defined as either 1/2B_{MSY} or 1/4 B_{MSY}. B_{threshold} is also known as B_{minimum}.

B_{target}: A desirable biomass to maintain fishery stocks. This is usually synonymous with B_{MSY} or its proxy.

Biomass weighted F: A measure of fishing mortality that is defined as an average of fishing mortality at age weighted by biomass at age for a ranges of ages within the stock (e.g., ages 1⁺ biomass weighted F is a weighted average of the mortality for ages 1 and older, age 3⁺ biomass weighted is a weighted average for ages 3 and older). Biomass weighted F can also be calculated using catch in weight over mean biomass. See also fully-recruited F.

Biota: All the plant and animal life of a particular region.

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Bivalve: A class of mollusks having a soft body with platelike gills enclosed within two shells hinged together; e.g., clams, mussels.

Bottom roughness: The inequalities, ridges, or projections on the surface of the seabed that are caused by the presence of bedforms, sedimentary structures, sedimentary particles, excavations, attached and unattached organisms, or other objects; generally small scale features.

Bottom tending mobile gear: All fishing gear that operates on or near the ocean bottom that is actively worked in order to capture fish or other marine species. Some examples of bottom tending mobile gear are otter trawls and dredges.

Bottom tending static gear: All fishing gear that operates on or near the ocean bottom that is not actively worked; instead, the effectiveness of this gear depends on species moving to the gear which is set in a particular manner by a vessel, and later retrieved. Some examples of bottom tending static gear are gillnets, traps, and pots.

Boulder reef: An elongated feature (a chain) of rocks (generally piled boulders) on the seabed.

Bryozoans: Phylum aquatic organisms, living for the most part in colonies of interconnected individuals. A few to many millions of these individuals may form one colony. Some bryozoans encrust rocky surfaces, shells, or algae others form lacy or fan-like colonies that in some regions may form an abundant component of limestones. Bryozoan colonies range from millimeters to meters in size, but the individuals that make up the colonies are rarely larger than a millimeter. Colonies may be mistaken for hydroids, corals or seaweed.

Burrow: A hole or excavation in the sea floor made by an animal (as a crab, lobster, fish, burrowing anemone) for shelter and habitation.

Bycatch: (v.) the capture of nontarget species in directed fisheries which occurs because fishing gear and methods are not selective enough to catch only target species; (n.) fish which are harvested in a fishery but are not sold or kept for personal use, including economic discards and regulatory discards but not fish released alive under a recreational catch and release fishery management program.

Capacity: the level of output a fishing fleet is able to produce given specified conditions and constraints. Maximum fishing capacity results when all fishing capital is applied over the maximum amount of available (or permitted) fishing time, assuming that all variable inputs are utilized efficiently.

Catch: The sum total of fish killed in a fishery in a given period. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths.

Closed Area Model: A General Algebraic Modeling System (GAMS) model used to evaluate the effectiveness of effort controls used in the Northeast Multispecies Fishery. Using catch data from vessels in the fishery, the model estimates changes in exploitation that may result from changes in DAS, closed areas, and possession limits. These changes in exploitation are then converted to changes in fishing mortality to evaluate proposed measures.

Coarse sediment: Sediment generally of the sand and gravel classes; not sediment composed primarily of mud; but the meaning depends on the context, e.g. within the mud class, silt is coarser than clay.

Commensalism: See *Mutualism*. An interactive association of two species where one benefits in some way, while the other species is in no way affected by the association.

Continental shelf waters: The waters overlying the continental shelf, which extends seaward from the shoreline and deepens gradually to the point where the sea floor begins a slightly steeper descent to the deep ocean floor; the depth of the shelf edge varies, but is approximately 200 meters in many regions.

Control rule: A pre-determined method for determining fishing mortality rates based on the relationship of current stock biomass to a biomass target. Amendment 9 overfishing control rules define a target biomass (B_{MSY} or proxy) as a management objective. The biomass threshold ($B_{threshold}$ or B_{min}) defines a minimum biomass below which a stock is considered overfished.

Cohort: see yearclass.

Crustaceans: Invertebrates characterized by a hard outer shell and jointed appendages and bodies. They usually live in water and breathe through gills. Higher forms of this class include lobsters, shrimp and crawfish; lower forms include barnacles.

Days absent: an estimate by port agents of trip length. This data was collected as part of the NMFS weighout system prior to May 1, 1994.

Days-at-sea (DAS): the total days, including steaming time that a boat spends at sea to fish. Amendment 13 categorized DAS for the multispecies fishery into three categories, based on each individual vessel's fishing history during the period fishing year 1996 through 2001. The three categories are: Category A: can be used to target any groundfish stock; Category B: can only be used to target healthy stocks; Category C: cannot be used until some point in the future. Category B DAS are further divided equally into Category B (regular) and Category B (reserve).

DAS “flip”: A practice in the Multispecies FMP that occurs when a vessel fishing on a Category B (regular) DAS must change (“flip”) its DAS to a Category A DAS because it has exceeded a catch limit for a stock of concern.

Demersal species: Most often refers to fish that live on or near the ocean bottom. They are often called benthic fish, groundfish, or bottom fish.

Diatoms: Small mobile plants (algæ) with silicified (silica, sand, quartz) skeletons. They are among the most abundant phytoplankton in cold waters, and an important part of the food chain.

Discards: animals returned to sea after being caught; see Bycatch (n.)

Dissolved nutrients: Non-solid nutrients found in a liquid.

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Echinoderms: A member of the Phylum Echinodermata. Marine animals usually characterized by a five-fold symmetry, and possessing an internal skeleton of calcite plates, and a complex water vascular system. Includes echinoids (sea urchins), crinoids (sea lillies) and asteroids (starfish).

Ecosystem-based management: a management approach that takes major ecosystem components and services—both structural and functional—into account, often with a multispecies or habitat perspective

Egg stage: One of several marked phases or periods in the development and growth of many animals. The life history stage of an animal that occurs after reproduction and refers to the developing embryo, its food store, and sometimes jelly or albumen, all surrounded by an outer shell or membrane. Occurs before the *larval* or *juvenile stage*.

Elasmobranch: Any of numerous fishes of the class Chondrichthyes characterized by a cartilaginous skeleton and placoid scales: sharks; rays; skates.

Embayment: A bay or an indentation in a coastline resembling a bay.

Emergent epifauna: See *Epifauna*. Animals living upon the bottom that extend a certain distance above the surface.

Epifauna: See *Benthic infauna*. *Epifauna* are animals that live on the surface of the substrate, and are often associated with surface structures such as rocks, shells, vegetation, or colonies of other animals.

Essential Fish Habitat (EFH): Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The EFH designation for most managed species in this region is based on a legal text definition and geographical area that are described in the Habitat Omnibus Amendment (1998).

Estuarine area: The area of an estuary and its margins; an area characterized by environments resulting from the mixing of river and sea water.

Estuary: A water passage where the tide meets a river current; especially an arm of the sea at the lower end of a river; characterized by an environment where the mixing of river and seawater causes marked variations in salinity and temperature in a relatively small area.

Eutrophication: A set of physical, chemical, and biological changes brought about when excessive nutrients are released into the water.

Euphotic zone: The zone in the water column where at least 1% of the incident light at the surface penetrates.

Exclusive Economic Zone (EEZ): a zone in which the inner boundary is a line coterminous with the seaward boundary of each of the coastal States and the outer boundary is line 200 miles away and parallel to the inner boundary

Exempt fisheries: Any fishery determined by the Regional Director to have less than 5 percent regulated species as a bycatch (by weight) of total catch according to 50 CFR 648.80(a)(7).

Exploitable biomass: The biomass of fish in the portion of the population that is vulnerable to fishing.

Exploitation pattern: Describes the fishing mortality at age as a proportion of fully recruited F (full vulnerability to the fishery). Ages that are fully vulnerable experience 100% of the fully recruited F and are termed fully recruited. Ages that are only partially vulnerable experience a fraction of the fully recruited F and are termed partially recruited. Ages that are not vulnerable to the fishery (including discards) experience no mortality and are considered pre-recruits. Also known as the partial recruitment pattern, partial recruitment vector or fishery selectivity.

Exploitation rate (u): The fraction of fish in the exploitable population killed during the year by fishing. This is an annual rate compared to F , which is an instantaneous rate. For example, if a population has 1,000,000 fish large enough to be caught and 550,000 are caught (landed and discarded) then the exploitation rate is 55%.

Fathom: A measure of length, containing six feet; the space to which a man can extend his arms; used chiefly in measuring cables, cordage, and the depth of navigable water by soundings.

Fishing mortality (F): A measurement of the rate of removal of fish from a population caused by fishing. This is usually expressed as an instantaneous rate (F) and is the rate at which fish are harvested at any given point in a year. Instantaneous fishing mortality rates can be either fully recruited or biomass weighted. Fishing mortality can also be expressed as an exploitation rate (see exploitation rate) or less commonly, as a conditional rate of fishing mortality (m , fraction of fish removed during the year if no other competing sources of mortality occurred. Lower case m should not be confused with upper case M , the instantaneous rate of natural mortality).

$F_{0.1}$: a conservative fishing mortality rate calculated as the F associated with 10 percent of the slope at origin of the yield-per-recruit curve.

F_{MAX} : a fishing mortality rate that maximizes yield per recruit. F_{MAX} is less conservative than $F_{0.1}$.

F_{MSY} : a fishing mortality rate that would produce MSY when the stock biomass is sufficient for producing MSY on a continuing basis.

$F_{threshold}$: 1) The maximum fishing mortality rate allowed on a stock and used to define overfishing for status determination. Amendment 9 frequently uses F_{MSY} or F_{MSY} proxy for $F_{threshold}$. 2) The maximum fishing mortality rate allowed for a given biomass as defined by a control rule.

Fishing effort: the amount of time and fishing power used to harvest fish. Fishing power is a function of gear size, boat size and horsepower.

Framework adjustments: adjustments within a range of measures previously specified in a fishery management plan (FMP). A change usually can be made more quickly and easily by a framework adjustment than through an amendment. For plans developed by the New England Council, the procedure

requires at least two Council meetings including at least one public hearing and an evaluation of environmental impacts not already analyzed as part of the FMP.

Furrow: A trench in the earth made by a plow; something that resembles the track of a plow, as a marked narrow depression; a groove with raised edges.

Glacial moraine: A sedimentary feature deposited from glacial ice; characteristically composed of unsorted clay, sand, and gravel. Moraines typically are hummocky or ridge-shaped and are located along the sides and at the fronts of glaciers.

Glacial till: Unsorted sediment (clay, sand, and gravel mixtures) deposited from glacial ice.

Grain size: the size of individual sediment particles that form a sediment deposit; particles are separated into size classes (e.g. very fine sand, fine sand, medium sand, among others); the classes are combined into broader categories of mud, sand, and gravel; a sediment deposit can be composed of few to many different grain sizes.

Growth overfishing: Fishing at an exploitation rate or at an age at entry that reduces potential yields from a cohort but does not reduce reproductive output (see recruitment overfishing).

Halocline: The zone of the ocean in which salinity increases rapidly with depth.

Habitat complexity: Describes or measures a habitat in terms of the variability of its characteristics and its functions, which can be biological, geological, or physical in nature. Refers to how complex the physical structure of the habitat is. A bottom habitat with *structure-forming organisms*, along with other three dimensional objects such as boulders, is more complex than a flat, featureless, bottom.

Highly migratory species: tuna species, marlin, oceanic sharks, sailfishes, and swordfish

Hydroids: Generally, animals of the Phylum Cnidaria, Class Hydrozoa; most hydroids are bush-like polyps growing on the bottom and feed on plankton, they reproduce asexually and sexually.

Immobile epifaunal species: See *epifauna*. Animals living on the surface of the bottom substrate that, for the most part, remain in one place.

Individual Fishing Quota (IFQ): federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by an individual person or entity

Juvenile stage: One of several marked phases or periods in the development and growth of many animals. The life history stage of an animal that comes between the *egg* or *larval stage* and the *adult stage*; juveniles are considered immature in the sense that they are not yet capable of reproducing, yet they differ from the larval stage because they look like smaller versions of the adults.

Landings: The portion of the catch that is harvested for personal use or sold.

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Land runoff: The part of precipitation, snowmelt, or irrigation water that reaches streams (and thence the sea) by flowing over the ground, or the portion of rain or snow that does not percolate into the ground and is discharged into streams instead.

Larvae stage: One of several marked phases or periods in the development and growth of many animals. The first stage of development after hatching from the *egg* for many fish and invertebrates. This life stage looks fundamentally different than the juvenile and adult stages, and is incapable of reproduction; it must undergo metamorphosis into the juvenile or adult shape or form.

Lethrinids: Fish of the genus *Lethrinus*, commonly called emperors or nor'west snapper, are found mainly in Australia's northern tropical waters. Distinctive features of Lethrinids include thick lips, robust canine teeth at the front of the jaws, molar-like teeth at the side of the jaws and cheeks without scales. Lethrinids are carnivorous bottom-feeding fish with large, strong jaws.

Limited-access permits: permits issued to vessels that met certain qualification criteria by a specified date (the "control date").

Lutjanids: Fish of the genus of the Lutjanidae: snappers. Marine; rarely estuarine. Some species do enter freshwater for feeding. Tropical and subtropical: Atlantic, Indian and Pacific Oceans.

Macrobenthos: See *Benthic community* and *Benthic infauna*. Benthic organisms whose shortest dimension is greater than or equal to 0.5 mm.

Maturity ogive: A mathematical model used to describe the proportion mature at age for the entire population. A_{50} is the age where 50% of the fish are mature.

Mean biomass: The average number of fish within an age group alive during a year multiplied by average weight at age of that age group. The average number of fish during the year is a function of starting stock size and mortality rate occurring during the year. Mean biomass can be aggregated over several ages to describe mean biomass for the stock. For example the mean biomass summed for ages 1 and over is the 1^+ mean biomass; mean biomass summed across ages 3 and over is 3^+ mean biomass.

Megafaunal species: The component of the fauna of a region that comprises the larger animals, sometimes defined as those weighing more than 100 pounds.

Mesh selectivity ogive: A mathematical model used to describe the selectivity of a mesh size (proportion of fish at a specific length retained by mesh) for the entire population. L_{25} is the length where 25% of the fish encountered are retained by the mesh. L_{50} is the length where 50% of the fish encountered are retained by the mesh.

Meter: A measure of length, equal to 39.37 English inches, the standard of linear measure in the metric system of weights and measures. It was intended to be, and is very nearly, the ten millionth part of the distance from the equator to the north pole, as ascertained by actual measurement of an arc of a meridian.

Metric ton: A unit of weight equal to a thousand kilograms (1kgs = 2.2 lbs.). A metric ton is equivalent to 2,205 lbs. A thousand metric tons is equivalent to 2.2 million lbs.

Microalgal: Small microscopic types of algae such as the green algae.

Microbial: Microbial means of or relating to microorganisms.

Minimum spawning stock threshold: the minimum spawning stock size (or biomass) below which there is a significantly lower chance that the stock will produce enough new fish to sustain itself over the long term.

Mobile organisms: organisms that are not confined or attached to one area or place, that can move on their own, are capable of movement, or are moved (often passively) by the action of the physical environment (waves, currents, etc.).

Molluscs: Common term for animals of the phylum Mollusca. Includes groups such as the bivalves (mussels, oysters etc.), cephalopods (squid, octopus etc.) and gastropods (abalone, snails). Over 80,000 species in total with fossils back to the Cambrian period.

Mortality: see Annual total mortality (A), Exploitation rate (u), Fishing mortality (F), Natural mortality (M), and instantaneous total mortality (Z).

Motile: Capable of self-propelled movement. A term that is sometimes used to distinguish between certain types of organisms found in water.

Multispecies: the group of species managed under the Northeast Multispecies Fishery Management Plan. This group includes whiting, red hake and ocean pout plus the regulated species (cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake and redfish).

Mutualism: See *Commensalism*. A symbiotic interaction between two species in which both derive some benefit.

Natural disturbance: A change caused by natural processes; e.g. in the case of the seabed, changes can be caused by the removal or deposition of sediment by currents; such natural processes can be common or rare at a particular site.

Natural mortality: A measurement of the rate of death from all causes other than fishing such as predation, disease, starvation, and pollution. Commonly expressed as an instantaneous rate (M). The rate of natural mortality varies from species to species, but is assumed to be $M=0.2$ for the five critical stocks. The natural mortality rate can also be expressed as a conditional rate (termed n and not additive with competing sources of mortality such as fishing) or as annual expectation of natural death (termed v and additive with other annual expectations of death).

Nearshore area: The area extending outward an indefinite but usually short distance from shore; an area commonly affected by tides and tidal and storm currents, and shoreline processes.

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Nematodes: a group of elongated, cylindrical worms belonging to the phylum Nematodea, also called thread-worms or eel-worms. Some non-marine species attack roots or leaves of plants, others are parasites on animals or insects.

Nemertean: Proboscis worms belonging to the phylum Nemertea, and are soft unsegmented marine worms that have a threadlike proboscis and the ability to stretch and contract.

Nemipterids: Fishes of the Family Nemipteridae, the threadfin breams or whiptail breams. Distribution: Tropical and sub-tropical Indo-West Pacific.

Northeast Shelf Ecosystem: The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream.

Northwest Atlantic Analysis Area (NAAA): A spatial area developed for analysis purposes only. The boundaries of this the area are within the 500 fathom line to the east, the coastline to the west, the Hague line to the north, and the North Carolina/ South Carolina border to the south. The area is approximately 83,550 square nautical miles, and is used as the denominator in the EFH analysis to determine the percent of sediment, EFH, and biomass contained in an area, as compared to the total NAAA.

Nutrient budgets: An accounting of nutrient inputs to and production by a defined ecosystem (e.g., salt marsh, estuary) versus utilization within and export from the ecosystem.

Observer: any person required or authorized to be carried on a vessel for conservation and management purposes by regulations or permits under this Act

Oligochaetes: See *Polychaetes*. Oligochaetes are worms in the phylum Annelida having bristles borne singly along the length of the body.

Open access: describes a fishery or permit for which there is no qualification criteria to participate. Open-access permits may be issued with restrictions on fishing (for example, the type of gear that may be used or the amount of fish that may be caught).

Opportunistic species: Species that colonize disturbed or polluted sediments. These species are often small, grow rapidly, have short life spans, and produce many offspring.

Optimum Yield (OY): the amount of fish which A) will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery

Organic matter: Material of, relating to, or derived from living organisms.

Overfished: A condition defined when stock biomass is below minimum biomass threshold and the probability of successful spawning production is low.

Overfishing: A level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

Peat bank: A bank feature composed of partially carbonized, decomposed vegetable tissue formed by partial decomposition of various plants in water; may occur along shorelines.

Pelagic gear: Mobile or static fishing gear that is not fixed, and is used within the water column, not on the ocean bottom. Some examples are mid-water trawls and pelagic longlines.

Phytoplankton: Microscopic marine plants (mostly algae and diatoms) which are responsible for most of the photosynthetic activity in the oceans.

Piscivore: A species feeding preferably on fish.

Planktivore: An animal that feeds on plankton.

Polychaetes: Polychaetes are segmented worms in the phylum Annelida. Polychaetes (poly-chaetae = many-setae) differ from other annelids in having many setae (small bristles held in tight bundles) on each segment.

Porosity: The amount of free space in a volume of a material; e.g. the space that is filled by water between sediment particles in a cubic centimeter of seabed sediment.

Possession-limit-only permit: an open-access permit (see above) that restricts the amount of multispecies a vessel may retain (currently 500 pounds of "regulated species").

Potential Sector Contribution (PSC): The percentage of the available catch a limited access permit is entitled to after joining a sector. Based on landings history as defined in Amendment 16. The sum of the PSC's in a sector is multiplied by the groundfish sub-ACL to get the ACE for the sector.

Pre-recruits: Fish in size or age groups that are not vulnerable to the fishery (including discards).

Prey availability: The availability or accessibility of prey (food) to a predator. Important for growth and survival.

Primary production: The synthesis of organic materials from inorganic substances by photosynthesis.

Recovery time: The period of time required for something (e.g. a habitat) to achieve its former state after being disturbed.

Recruitment: the amount of fish added to the fishery each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to fishing gear in one year would be the recruitment to the fishery. “Recruitment” also refers to new year classes entering the population (prior to recruiting to the fishery).

Recruitment overfishing: fishing at an exploitation rate that reduces the population biomass to a point where recruitment is substantially reduced.

Regulated groundfish species: cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake and redfish. These species are usually targeted with large-mesh net gear.

Relative exploitation: an index of exploitation derived by dividing landings by trawl survey biomass. This measure does not provide an absolute magnitude of exploitation but allows for general statements about trends in exploitation.

Retrospective pattern: A pattern of systematic over-estimation or underestimation of terminal year estimates of stock size, biomass or fishing mortality compared to that estimate for that same year when it occurs in pre-terminal years.

Riverine area: The area of a river and its banks.

Saurids: Fish of the family Scomberesocidae, the sauries or needlefishes. Distribution: tropical and temperate waters.

Scavenging species: An animal that consumes dead organic material.

Sea whips: A coral that forms long flexible structures with few or no branches and is common on Atlantic reefs.

Sea pens: An animal related to corals and sea anemones with a featherlike form.

Sediment: Material deposited by water, wind, or glaciers.

Sediment suspension: The process by which sediments are suspended in water as a result of disturbance.

Sedentary: See *Motile* and *Mobile organisms*. Not moving. Organisms that spend the majority of their lives in one place.

Sedimentary bedforms: Wave-like structures of sediment characterized by crests and troughs that are formed on the seabed or land surface by the erosion, transport, and deposition of particles by water and wind currents; e.g. ripples, dunes.

Sedimentary structures: Structures of sediment formed on the seabed or land surface by the erosion, transport, and deposition of particles by water and wind currents; e.g. ripples, dunes, buildups around boulders, among others.

Sediment types: Major combinations of sediment grain sizes that form a sediment deposit, e.g. mud, sand, gravel, sandy gravel, muddy sand, among others.

Spawning adult stage: See *adult stage*. Adults that are currently producing or depositing eggs.

Spawning stock biomass (SSB): the total weight of fish in a stock that sexually mature, i.e., are old enough to reproduce.

Species assemblage: Several species occurring together in a particular location or region

Species composition: A term relating the relative abundance of one species to another using a common measurement; the proportion (percentage) of various species in relation to the total on a given area.

Species diversity: The number of different species in an area and their relative abundance

Species richness: See *Species diversity*. A measurement or expression of the number of species present in an area; the more species present, the higher the degree of species richness.

Species with vulnerable EFH: If a species was determined to be “highly” or “moderately” vulnerable to bottom tending gears (otter trawls, scallop dredges, or clam dredges) then it was included in the list of species with vulnerable EFH. Currently there are 23 species and life stages that are considered to have vulnerable EFH for this analysis.

Status Determination: A determination of stock status relative to $B_{\text{threshold}}$ (defines overfished) and $F_{\text{threshold}}$ (defines overfishing). A determination of either overfished or overfishing triggers a SFA requirement for rebuilding plan (overfished), ending overfishing (overfishing) or both.

Stock: A grouping of fish usually based on genetic relationship, geographic distribution and movement patterns. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod). A species, subspecies, geographical grouping, or other category of fish capable of management as a unit.

Stock assessment: determining the number (abundance/biomass) and status (life-history characteristics, including age distribution, natural mortality rate, age at maturity, fecundity as a function of age) of individuals in a stock

Stock of concern: a regulated groundfish stock that is overfished, or subject to overfishing.

Structure-forming organisms: Organisms, such as corals, colonial bryozoans, hydroids, sponges, mussel beds, oyster beds, and seagrass that by their presence create a three-dimensional physical structure on the bottom. See *biogenic habitats*.

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Submerged aquatic vegetation: Rooted aquatic vegetation, such as seagrasses, that cannot withstand excessive drying and therefore live with their leaves at or below the water surface in shallow areas of estuaries where light can penetrate to the bottom sediments. SAV provides an important habitat for young fish and other aquatic organisms.

Surficial sediment: Sediment forming the sea floor or land surface; thickness of the surficial layer may vary.

Surplus production: Production of new stock biomass defined by recruitment plus somatic growth minus biomass loss due to natural deaths. The rate of surplus production is directly proportional to stock biomass and its relative distance from the maximum stock size at carrying capacity (K). B_{MSY} is often defined as the biomass that maximizes surplus production rate.

Surplus production models: A family of analytical models used to describe stock dynamics based on catch in weight and CPUE time series (fishery dependent or survey) to construct stock biomass history. These models do not require catch at age information. Model outputs may include stock biomass history, biomass weighted fishing mortality rates, MSY , F_{MSY} , B_{MSY} , K , (maximum population biomass where stock growth and natural deaths are balanced) and r (intrinsic rate of increase).

Survival rate (S): Rate of survival expressed as the fraction of a cohort surviving the a period compared to number alive at the beginning of the period ($\#$ survivors at the end of the year / numbers alive at the beginning of the year). Pessimists convert survival rates into annual total mortality rate using the relationship $A=1-S$.

Survival ratio (R/SSB): an index of the survivability from egg to age-of-recruitment. Declining ratios suggest that the survival rate from egg to age-of-recruitment is declining.

TAC: Total allowable catch. This value is calculated by applying a target fishing mortality rate to exploitable biomass.

Taxa: The plural of taxon. Taxon is a named group or organisms of any rank, such as a particular species, family, or class.

Ten-minute- “squares” of latitude and longitude (TMS): Are a measure of geographic space. The actual size of a ten-minute-square varies depending on where it is on the surface of the earth, but in general each square is approximately 70-80 square nautical miles in this region. This is the spatial area that EFH designations, biomass data, and some of the effort data have been binned into for analysis purposes in various sections of this document.

Topography: The depiction of the shape and elevation of land and sea floor surfaces.

Total Allowable Catch (TAC): The amount (in metric tons) of a stock that is permitted to be caught during a fishing year. In the Multispecies FMP, TACs can either be “hard” (fishing ceases when the TAC is caught) or a “target” (the TAC is merely used as an indicator to monitor effectiveness of management measures, but does not trigger a closure of the fishery).

Total mortality: The rate of mortality from all sources (fishing, natural, pollution) Total mortality can be expressed as an instantaneous rate (called Z and equal to $F + M$) or Annual rate (called A and calculated as the ratio of total deaths in a year divided by number alive at the beginning of the year)

Trophic guild: Trophic is defined as the feeding level within a system that an organism occupies; e.g., predator, herbivore. A guild is defined as a group of species that exploit the same class of environmental resources in a similar way. The trophic guild is a utilitarian concept covering both structure and organization that exists between the structural categories of trophic groups and species.

Turbidity: Relative water clarity; a measurement of the extent to which light passing through water is reduced due to suspended materials.

Two-bin (displacement) model: a model used to estimate the effects of area closures. This model assumes that effort from the closed areas (first bin) is displaced to the open areas (second bin). The total effort in the system is then applied to the landings-per-unit-effort (LPUE) in open areas to obtain a projected catch. The percent reduction in catch is calculated as a net result.

Vulnerability: In order to evaluate the potential adverse effects of fishing on EFH, the vulnerability of each species EFH was determined. This analysis defines vulnerability as the likelihood that the functional value of EFH would be adversely affected as a result of fishing with different gear types. A number of criteria were considered in the evaluation of the vulnerability of EFH for each life stage including factors like the function of habitat for shelter, food and/or reproduction.

Yield-per-recruit (YPR): the expected yield (weight) of individual fish calculated for a given fishing mortality rate and exploitation pattern and incorporating the growth characteristics and natural mortality.

Yearclass: also called cohort. Fish that were spawned in the same year. By convention, the “birth date” is set to January 1st and a fish must experience a summer before turning 1. For example, winter flounder that were spawned in February-April 1997 are all part of the 1997 cohort (or year-class). They would be considered age 0 in 1997, age 1 in 1998, etc. A summer flounder spawned in October 1997 would have its birth date set to the following January 1 and would be considered age 0 in 1998, age 1 in 1999, etc.

Z: instantaneous rate of total mortality. The components of Z are additive (i.e., $Z = F + M$)

Zooplankton: See *Phytoplankton*. Small, often microscopic animals that drift in currents. They feed on detritus, phytoplankton, and other zooplankton. They are preyed upon by fish, shellfish, whales, and other zooplankton.

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