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

MAR 3 2010

To All Interested Government Agencies and Public Groups:

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

TITLE: Northeast (NE) Multispecies Fishery Management Plan (FMP); Fishing Year (FY) 2010 Sector Operations Plans and Contracts, and Allocation of NE Multispecies Annual Catch Entitlements

LOCATION: Northeastern United States, Northwest Atlantic, Exclusive Economic Zone

SUMMARY: Approval of 17 sector operations plans and contracts for the FY 2010; authorizes the operation of the 17 sectors for FY 2010; allocates NE multispecies annual catch entitlements to 17 sectors, and exempts sector members from various regulations of the NE Multispecies FMP.

RESPONSIBLE OFFICIAL: Patricia A. Kurkul
Regional Administrator
National Marine Fisheries Service, National Oceanic and Atmospheric Administration (NOAA)
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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, environmental impact statements were not prepared. Copies of the findings of no significant impact (FONSIs), including the environmental assessments (EAs), are enclosed for your information.

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

Sincerely,

for Paul N. Doremus, Ph. D.
NEPA Coordinator

Enclosure

Sustainable Harvest Sector

A Final Environmental Assessment

Prepared by:
Sustainable Harvest Sector
ENTRIX, Inc.

Lead Agency:
National Marine Fisheries Service

February 2010

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ACRONYMS

ABC	Acceptable Biological Catch
ACE	Annual Catch Entitlement
ACL	Annual Catch Limit
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountablility Measure
APA	Administrative Procedures Act
ASMFC	Atlantic States Marine Fisheries Commission
BDTRP	Bottlenose Dolphin Take Reduction Plan
B_{MSY}	biomass necessary to produce maximum sustainable yield
BOF	Bay of Fundy
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
CeTAP	Cetacean and Turtle Assessment Program
CLF	Conservation Law Foundation
cm	centimeter
Council	New England Fishery Management Council
CPUE	catch per unit of effort
CWA	Cape Wind Associates
CZMA	Coastal Zone Management Act
CZMP	coastal zone management program
DAS	days-at-sea
DPS	distinct population segment
EA	Environmental Assessment
EEZ	exclusive economic zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
F	Fishing mortality rate

FMP	fishery management plan
F_{MSY}	fishing mortality rate that produces the maximum sustainable yield
FRFA	Final Regulatory Flexibility Analysis
FSEIS	Final Supplemental Environmental Impact Statement
FW	Framework
FY	fishing year
GARM	Groundfish Assessment Review Meeting
GB	Georges Bank
GFCPF	Gloucester Fishing Community Preservation Fund
GOM	Gulf of Maine
HAPC	habitat area of particular concern
HPTRP	Harbor Porpoise Take Reduction Plan
ICES	International Council for Exploration of the Sea
IQA	Information Quality Act
kg	Kilogram
km	Kilometer
lbs	pounds
LNG	liquified natural gas
LOF	List of Fisheries
m	meter
MAFMC	Mid-Atlantic Fishery Management Council
mm	millimeter
MMPA	Marine Mammal Protection Act
MSY	Maximum Sustainable Yield
mt	metric ton
NAICS	North American Industry Classification System
NAO	NOAA Administrative Order
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act

NERO	Northeast Regional Office
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NRC	National Research Council
NREFHSC	Northeast Region Essential Fish Habitat Steering Committee
OLE	Office for Law Enforcement (NMFS)
OMB	Office of Management and Budget
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
PSC	Potential Sector Contribution
RFA	Regulatory Flexibility Act
RFAA	Regulatory Flexibility Act Analysis
RMA	Regulated Mesh Area
SAFE	Stock Assessment and Fishery Evaluation
SAP	Special Access Program
SAR	Stock Assessment Reports
SEFSC	NMFS Southeast Fisheries Science Center
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SHS	Sustainable Harvest Sector
SNE	southern New England
SNE/MA	southern New England/Mid-Atlantic
TAC	total allowable catch
TED	turtle exclusion device
TEWG	Turtle Expert Working Group
TRAC	Transboundary Resources Assessment Committee
USFWS	United States Fish and Wildlife Service
VEC(s)	Valued Ecosystem Component(s)
VMS	vessel monitoring system

VTR	vessel trip report
WNA	western North Atlantic

1.0 INTRODUCTION

The Sustainable Harvest Sector (SHS) has prepared an Operations Plan and requested an allocation of an Annual Catch Entitlement (ACE) of 14 stocks of fish managed under the Northeast Multispecies Fishery Management Plan (FMP) for the 2010 fishing year. If approved, the fishing year (FY) 2010 would be the first year that the SHS would operate.

A Sector is defined as:
a group of persons holding limited access vessel permits who have voluntarily entered into a contract and agree to certain fishing restrictions for a specified period of time, and which has been granted an annual catch entitlement in order to achieve objectives consistent with applicable FMP goals and objectives. In the formation of a sector, sector participants can select who could participate (NEFMC 2009a).

The SHS would consist of 129 permits. There would be 44 active fishing vessels; 40 of which are bottom trawlers, and 4 are gillnetters. A couple of the gillnetters may switch to demersal longline gear to take advantage of the Closed Area I Hook Gear Haddock Special Access Program (SAP). Most SHS members fish their vessels between 150-and 220-days per year, primarily in the fall, winter, and spring, although a few vessels fish year-round. Some members have fewer days allocated and fish for groundfish about 100 days per year, and focus on other fisheries including, monkfish and shrimp, for certain months of the year. SHS vessels fish primarily in the U.S. Exclusive Economic Zone (EEZ) of the Gulf of Maine and Georges Bank when fishing for groundfish. SHS members fish from various ports in Point Judith and Newport, Rhode Island; Boston, Chatham, Gloucester, Hyannis, New Bedford, Provincetown, and Scituate, Massachusetts; Portsmouth and Rye, New Hampshire; and Kennebunkport and surrounding communities, Cundy's Harbor, Phippsburg, Portland Harbor, and Rockland, Maine. Secondary ports may include Woods Hole, Massachusetts; Bar Harbor and Southwest Harbor, Maine; and Montauk, New York. Over three-quarters of the vessels are concentrated in the Boston and Portland areas.

This Environmental Assessment (EA) was prepared in compliance with the new sector regulations as described in Amendment 16 to the Northeast Multispecies FMP. This EA describes the potential impacts of approval of the SHS on the human environment, in accordance with the National Environmental Policy Act (NEPA). The analysis in this EA tiers off the information and analysis contained in the Environmental Impact Statement (EIS) for Amendment 16 to the Northeast Multispecies FMP. The latter document analyzes measures to achieve mortality targets, provide opportunities to target healthy stocks, mitigate the economic impacts of the measures, and improve administration of the fishery. In that EIS, 19 sectors have been established and criteria were set for developing their Operations Plans. The impacts associated with the specific actions of each sector are captured in the individual EAs (such as this one), while the impacts associated with Amendment 16 (the regulation authorizing the formation of sectors) are more broadly analyzed in the corresponding EIS. As stated in the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Part 1502.20), "tiering" is encouraged to eliminate repetitive discussions of the same issues and focuses on the actual issues ripe for decision at each level of environmental review.

The analyses in this EA are based upon the Sector's proposed Operations Plan and the Sector roster submitted on January 22, 2010. The analyses assume all permits remain in the Sector for FY 2010; however, it is possible for permits on the roster to withdraw from the sector through April 30, 2010. A permit not on the roster could be permanently combined with a permit on the roster (through the Days-at-

Sea [DAS] Transfer Program), which would result in the potential sector contribution (PSC; a percentage) of both permits being combined permanently and attributed to the permit on the roster (see Section 1.2 for a definition of PSC). Sector vessels may only participate in a DAS transfer with vessels from other sectors or the Common Pool up until May 1, 2010. These changes will not require a supplemental EA. Removal of a permit from the roster will not require a supplemental EA.

Sectors have indicated that no redirection of effort onto other fisheries or consolidation of permits is expected to occur. Based on this response, the overall vessel and gear composition of the groundfishing fleet is not expected to change dramatically as a result of half the fleet potentially moving from the Common Pool to sector management.

1.1 MULTISPECIES FISHERY

In 1986, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act,, (Magnuson-Stevens Act) the New England Fishery Management Council (NEFMC or Council) implemented the Northeast Multispecies FMP with the goals of reducing fishing mortality of heavily fished groundfish stocks and promoting rebuilding of those stocks to sustainable biomass levels. Fifteen species of groundfish were originally managed under this plan. With the implementation of Amendment 16 to the Northeast Multispecies FMP which adds Atlantic wolffish, there will be thirteen species (twelve of which are large-mesh) managed together based on fish size and the type of gear used to harvest the fish: Atlantic cod, haddock, pollock, yellowtail flounder, witch flounder, winter flounder, windowpane flounder, American plaice, Atlantic halibut, redfish, ocean pout, white hake, and wolffish. Three other species (silver hake [or whiting], red hake, and offshore hake) are now managed under a separate small-mesh multispecies program pursuant to Amendment 12 of the Northeast Multispecies FMP. Several large-mesh species are managed as two or more separate stocks, based on geographic region. For example, Atlantic cod is managed as two stocks: Georges Bank (GB) cod and Gulf of Maine (GOM) cod. This large-mesh multispecies fishery is administered with a variety of management tools, including DAS, Closed Areas, trip limits, minimum fish sizes, gear restrictions, and sectors.

1.2 SECTORS AS A MANAGEMENT TOOL

The final rule implementing Amendment 13 to the Northeast Multispecies FMP (69 FR 22906, April 27, 2004) articulated a process for the formation of sectors within the Northeast multispecies fishery and for the allocation of the total allowable catch (TAC)[1] for a specific groundfish species or for DAS, established the various elements of the first sector, the Georges Bank Cod Hook Sector, and implemented restrictions that apply to all sectors.

Amendment 13 also laid out the rebuilding plans for certain stocks managed under the Northeast Multispecies FMP. Two benchmark assessments were required as part of the rebuilding plans in 2005 and 2008 (Groundfish Assessment Review Meeting or GARM II and GARM III [Mayo and Terceiro 2005, NEFSC 2008]) to check rebuilding progress and ensure rebuilding targets would be met as planned. If the results of the second assessment (GARM III) indicated a need for adjustment to the rebuilding plans, then new management measures would be implemented through an amendment in time for the FY 2009 (halfway through the rebuilding plan for most stocks) (NEFSC 2008). Amendment 16 to the Northeast Multispecies FMP addresses the findings of the GARM III by imposing management measures consistent with species rebuilding plans and schedules.

[1] TAC is defined as a catch limit set for a particular fishery, generally for a year, or part of a year. This term has been usurped by Annual Catch Limit (ACL) as per the revised 2006 Magnuson-Stevens Act, but is still used in reference to stocks jointly managed by U.S. and Canada and is referenced by older regulations such as Amendment 13 to the Northeast Multispecies FMP.

Annual Catch Limits (ACLs) are the amount of catch allowed for the entire Northeast multispecies fleet. These levels are set to ensure that overfishing does not occur. In the Northeast multispecies fishery, this level is set below the **Acceptable Biological Catch** (ABC) of the fishery, to account for management and scientific uncertainty. When permit holders join a sector, they bring a **Potential Sector Contribution** (PSC), which is a share of the ACL for a stock. PSC is based on the fishing history attached to each permit joining that sector in a given year. To determine the weight (in pounds) that a sector can harvest for each stock, all of the sector member's PSCs (a percentage) are multiplied by the ACL. This amount is the sector's **Annual Catch Entitlement**, or ACE.

During the scoping process for Amendment 16 in 2006, the Council received a number of recommendations for new ways to manage the fishery, all of which would require major changes to the Northeast Multispecies FMP (71 FR 64941 November 6, 2006). Faced with the mandated 2009 deadline for implementation of the amendment, the Council voted to postpone development of all new management alternatives until Amendment 17, leaving Amendment 16 to focus on addressing the rebuilding plans as required under Amendment 13. Additionally, in April 2007, 17 different groups of fishermen submitted sector proposals and requested that the Council consider and approve additional new sectors through Amendment 16. One result of increased interest in sectors is that the Council determined that revisions to sector policies were needed. Therefore in addition to addressing the Amendment 13 rebuilding plans, sector procedures and policies were revised in Amendment 16. The Final Amendment 16 was issued on October 16, 2009 including the Final EIS. The proposed rule for Final Amendment 16 was issued on December 31, 2009, and it is expected that the final rule will be issued in Spring 2010. The final rule must be issued on or before May 1, 2010 for Amendment 16 to be enacted for FY 2010.

Two sectors have been successfully operating in New England, Georges Bank Cod Hook Sector and the Georges Bank Cod Fixed Gear Sector, each with an allocation of GB cod. Members collaborated on the development and submission of a binding operations plan, contract, and environmental assessment for approval. Their efforts resulted in an allocation of GB cod. The Georges Bank Cod Hook Sector was granted approval by Amendment 13 in 2004 (69 FR 43535 July 21 2004) and the Georges Bank Cod Fixed Gear Sector was granted approval by Framework (FW) 42 in 2006 (71 FR 62156 October 23, 2006).

Sectors allow fishermen to collaborate for the purpose of more efficiently harvesting an allocation of Northeast multispecies. In exchange for committing to operate under ACE for all allocated stocks and developing a legally binding operations plan and an EA, sector members are exempt from certain regulatory restrictions in the Northeast Multispecies FMP, including DAS, differential DAS counting areas, trip limits on stocks of concern, and the seasonal closure on Georges Bank. Sectors are required to develop, draft, and submit for approval an operations plan that describes how the sector would stay within their allocations as well as an EA describing the sector's impacts, in compliance with NEPA. A sector's operations plan governs the fishing behavior of sector members for the entire fishing year; so if a member chooses to leave the sector part way through the year, the member would not be allowed to fish in the groundfish fishery for the rest of that fishing year.

As a management tool, sectors satisfy several of the goals and objectives stated in Amendments 13 and 16 as described in detail in Section 2.2. First and foremost, sectors are an important tool for ending overfishing and rebuilding overfished fish stocks because members must operate under an ACE for all allocated groundfish stocks and are not allowed to retain any of certain stocks of concern.

Additionally, because sectors are operating under an ACE, these sectors are held accountable for their catch and discards through frequent (weekly) reporting and are not allowed to exceed their allocation. Sectors would be implementing ACLs and Accountability Measures (AMs), which would be triggered if their ACLs are exceeded, as mandated by the Magnuson-Stevens Act.

1.3 SUSTAINABLE HARVEST SECTOR

The SHS has prepared their Operations Plan and request an allocation of an ACE of 14 stocks of fish managed under the Northeast Multispecies FMP for the FY 2010. The SHS would be a group of 50 limited access Northeast multispecies permit holders who are voluntarily working together as a "Sector" under the terms described in Amendment 16 to the Northeast Multispecies FMP. These permit holders collectively own 129 Northeast multispecies (groundfish) permits. There would be 44 active vessels operating in this sector.

1.3.1 Intent and Goals of the Sustainable Harvest Sector

The SHS would be a group of limited access multispecies permit holders who have voluntarily chosen to cooperate for the purpose of more efficiently harvesting an annual allocation of large-mesh multispecies. If approved, the SHS would operate under an ACE for their allocation of 14 stocks to avoid overfishing and meet the mandates of the Magnuson-Stevens Act. Specific goals of the SHS are described in Section 2.0.

Implementation of the SHS Operations Plan would mitigate potentially adverse economic impacts that have been experienced as a result of Amendment 13, subsequent framework actions, and Amendment 16 to the Northeast Multispecies FMP by conveying environmental, social, and economic benefits directly to the SHS and the communities in which it operates.

2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

The need for the action is to provide an opportunity for flexible fisheries management through local decision-making, self-monitoring, and Sector management. The purpose of the action is to approve an Operations Plan and an allocation of ACE of up to 14 stocks of Northeast multispecies for the SHS, consistent with Amendment 16. Operation of the SHS is intended to alleviate social and economic hardships, but would also meet the biological objectives of the Northeast Multispecies FMP through management rules by which the Sector members agree to abide.

The SHS has established a set of goals that are designed to meet many of the goals and objectives set forth by the NEFMC in Amendment 16. The SHS goals and the relevant Amendment 16 goals and objectives are listed below. The SHS goals support Amendment 16 goals and objectives in a multitude of ways and selected concurrences are outlined in this section.

The Sustainable Harvest Sector has the following unique goals:

- **Goal 1:** To fish at sustainable levels.
- **Goal 2:** A fleet capacity that is commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.
- **Goal 3:** To maintain a directed commercial multispecies fishery in the Northeast region.
- **Goal 4:** To minimize adverse impacts on fishing communities and shore-side infrastructure.

- **Goal 5:** To provide reasonable and regulated access to the groundfish species to all members of the public of the United States for seafood consumption during the stock rebuilding period without compromising the Amendment 13 objectives or timetable.
- **Goal 6:** To promote stewardship within the fishery.
- **Goal 7:** To achieve on a continuing basis, optimum yield for the U.S. fishing industry.

The following Amendment 16[2] goals and objectives are consistent with the Sustainable Harvest Sector goals:

- **Goal 1:** Consistent with the National Standards and other required provisions of the Magnuson-Stevens Act and other applicable law, manage the Northeast multispecies complex at sustainable levels.
- **Goal 2**: Create a management system so that fleet capacity would be commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.
- **Goal 3**: Maintain a directed commercial and recreational fishery for Northeast multispecies.
- **Goal 4**: Minimize, to the extent practicable, adverse impacts on fishing communities and shore-side infrastructure.
- **Goal 5**: Provide reasonable and regulated access to the groundfish species covered in this plan to all members of the public of the United States for seafood consumption and recreational purposes during the stock rebuilding period without compromising the Amendment 13 objectives or timetable. If necessary, management measures could be modified in the future to ensure that the overall plan objectives are met.
- **Goal 6**: To promote stewardship within the fishery.

- **Objective 1**: Achieve, on a continuing basis, optimum yield for the U.S. fishing industry.
- **Objective 3**: Adopt fishery management measures that constrain fishing mortality to levels that are compliant with the Sustainable Fisheries Act (SFA).
- **Objective 4**: Implement rebuilding schedules for overfished stocks, and prevent overfishing.
- **Objective 5**: Adopt measures as appropriate to support international transboundary management of resources.
- **Objective 7**: To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation.
- **Objective 8**: Develop biological, economic, and social measures of success for the groundfish fishery and resource that insure accountability in achieving fishery management objectives.
- **Objective 10**: Identify and minimize bycatch, which include regulatory discards, to the extent practicable, and to the extent bycatch cannot be avoided, minimize the mortality of such.

[2] Excerpt from October 16, 2009 Final EIS for Amendment 16.

The SHS goal of fishing at a sustainable level (Goal 1) through utilization of an ACE is consistent with Amendment 16 Goal 1 (to manage the fishery at sustainable levels) and Objective 3 (to constrain fishing mortality to levels which comply with the SFA). The SHS Goal (2) of fleet capacity that matches the resource is consistent with Goal 2 of Amendment 16. The SHS Goal 3 of maintaining a directed commercial groundfish fishery in New England is consistent with Amendment 16 Goal 3 to maintain a directed commercial and recreational fishery. The SHS Goal 4 of minimizing adverse impacts on fishing communities and shore-side infrastructure is the same as Amendment 16 Goal 4. The SHS Goal 5 of providing access to the members of the United States public for seafood consumption during the rebuilding period without compromising Amendment 16 goals and objectives is consistent with Amendment 16 Goal 5. The SHS Goals 6 and 7, to promote stewardship and achieve optimum yield for the U.S. fishing industry, is consistent with Amendment 16 Goal 6 and Objective 1.

3.0 PROPOSED ACTION AND ALTERNATIVES

This section of the SHS EA describes the possible fishing alternatives, including details of the Proposed Action (Alternative 1) and a No-Action Alternative.

3.1 ALTERNATIVE 1 - IMPLMENTATION OF THE SUSTAINABLE HARVEST SECTOR OPERATIONS PLAN FOR FISHING YEAR 2010

A summary of the SHS Operations Plan (Proposed Action) is presented in Table 3.1-1, and further described, in the subsections below.

TABLE 3.1-1
Summary of the Sustainable Harvest Sector Operations Plan Fishing Year 2010

Sector Parameters	Description
Location	Inshore and offshore waters (all in the EEZ) of the Gulf of Maine, Georges Bank, and southern New England
Timeframe	May 1, 2010 –April 30, 2011
Gear	Trawl, gillnet, and hook and line gear, including jigs, handline, and non-automated demersal longlines
Allocated target species	14 stocks of Northeast multispecies complex 1. GOM cod 17.9% 2. GB cod 16.7% 3. GOM haddock 40.9% 4. GB haddock 29.6% 5. Redfish 49.0% 6. Pollock 38.0% 7. White hake 50.3% 8. Cape Cod/GOM yellowtail flounder 10.9% 9. GB yellowtail flounder 8.3% 10. Southern New England/Mid-Atlantic (SNE/MA) yellowtail flounder 11.5% 11. GOM winter flounder 7.2% 12. GB winter flounder 8.5% 13. Witch flounder 34.2% 14. American plaice 39.8% Total is equal to approximately 46 million pounds of whole fish. <u>Note:</u> Excludes SNE/MA winter flounder per Council decision June 2009.
Non-allocated target species and bycatch	Monkfish, Skates, and Dogfish
Exemptions requested	<u>Universal Exemptions:</u> PLUS <u>Additional Requested Exemptions</u> 1. The 20-day spawning block out of the fishery required for all vessels. 2. The 120-day block out of the fishery for gillnet vessels. 3. The limit on the number of gillnets imposed on Day category gillnet vessels, but not to exceed 150 nets per permit. 4. Length and horsepower restrictions on DAS leasing.
Number of participants	129 permits, 44 active vessels
Expected catch (including allocated and other landed species)	Assumed to be equal to the ACE = (PSC x ACL)

The term "allocated target species" refers to the list of groundfish species for which the Sector would receive an ACE (Section 3.1). "Non-allocated target species" refers to species which the Sector member would also be targeting, but for which no ACE is allocated. These other fish species ("non-allocated target") may be caught by the same gear while fishing for allocated target species, and brought to shore and sold to dealers (i.e., "landed"), assuming the fisherman has proper authorization or permit(s). These non-allocated target species may also be managed under the Northeast Multispecies FMP (e.g., halibut and whiting) or another Fishery Management Plan (e.g., Monkfish FMP). As defined in the Magnuson-Stevens Act, "bycatch" refers to "fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards." For the purposes of this EA, the discussion of non-allocated target species and bycatch refers primarily to skates, monkfish, and dogfish. These species predominate bycatch (i.e., dogfish) or are the primary alternate species that are landed by groundfishermen (i.e., monkfish and skates).

The SHS identified the following harvest rules to address requirements of an Operations Plan in accordance with Amendment 16 as described below in Table 3.1-2.

TABLE 3.1-2
Summary of Harvest Rules (Oct 6 09)

Quota Management	Brief Description of Measures
Aggregate Allocation and Distribution	Members will be allocated a portion of the Sector's total allocation based on the proportion of each stock that they contribute to the Sector's initial Aggregate Allocation.
Reserve	5 percent of each stock is set aside in reserve so the Sector does not exceed its allocation.
Full Retention of Legal Sized Fish	As required under Amendment 16 to the FMP.
Stock Area Declaration	SHS vessels must declare what stock area they are fishing in when they report daily to the Sector Manager.
Vessels Fishing Multiple Stock Areas	SHS vessels must estimate their catch from each stock area if they are fishing in more than one stock area in a day.
Fishing in US/Canada Areas	SHS vessels intend to fish in the Eastern and Western U.S./Canada Areas and all Northeast Multispecies FMP regulations apply.
Closed Areas	SHS vessels expect to fish in various Special Access Programs as authorized under Amendment 16.
Catch Reports	Sector vessel operators will report their catch and discards by allocated stock and broad stock area every day they are at sea to the Sector Manager via vessel monitoring system (VMS) or some other approved electronic means.
Vessel Logbooks	If there is a Dockside Monitor, the Monitor will collect a copy of the vessel trip report (VTR) and dealer receipt and send them to the Sector Manager within 24 hours of the offload. If there is no Dockside Monitor assigned, the vessel's operator will get the Sector Manager a copy of his VTRs and offload receipt within 24 hours of landing.
Weekly Reports	Submitted to NMFS as required under Amendment 16.
Data Reconciliation	Sector Manager will reconcile data from the various sources, including observer, dealer, VTR, and Dockside Monitor.
Discard Rate	The Sector-specific discard rate will be calculated by NMFS and applied by the Sector Manager to every trip.

TABLE 3.1-2 (continued) Summary of Harvest Rules (Oct 6 09)	
Quota Management	**Brief Description of Measures**
Hot Spot Reporting	All Sector members agree to report to Sector Manager any high concentrations of undersized fish or any allocated target stock that may potentially lead to the Sector being shut down.
ACE Transfers	The Sector Manager will monitor and track all ACE transfers within the Sector and between the SHS and any other sectors.
Additional Measures to Prevent ACE overages	1. See daily catch reports (above). 2. The Board reserves the right to prohibit fishing activities by Members if it determines that those activities undermine or compromise the Sector Plan and the Sector or otherwise conflict with the standards and ethics described in the bylaws and guiding principles. 3. When the Board imposes additional restrictions, they may also direct the Sector Manager to try to lease/buy or trade additional ACE of any stocks of concern by contacting other sector managers. 4. The Sector Manager may issue (and ask NMFS to enforce) a 'Stop Fishing Order' to any member vessels that are in danger of violating any part of the Sector's Operations Plan, including causing the Sector to exceed its allocation. 5. The reporting due date for the sector manager's weekly report will be increased to daily when either 80% of any of the sector's ACEs is reached, or when, for two consecutive weekly reporting periods 20% or more of the remaining portion of any ACE is harvested, whichever occurs first.
	Administrative
Days at Sea	Sector vessels will use their DAS to comply with the Monkfish FMP.
Annual Report	Sector Manager will submit an annual report on SHS operations for the year, to the NMFS within 60 days after the end of the fishing year.
Data Management	The Sector will collect, analyze, and maintain all Sector related catch data.
Proof of Sector Membership	Every active Sector vessel will carry on board the appropriate Letter of Authorization from the Regional Administrator.
	Gear Restrictions
Haul gillnets once every 7 days	The five gillnetters in the SHS agree to haul their gear at least once every seven days.
Seasonal or Area Gear Restrictions	May be implemented by the Sector Board of Directors to slow down fishing and or prevent exceeding the Sector's aggregate allocation for a stock.
	Monitoring
Daily Reporting to the Sector Manager	For every day vessels are at sea.
Dockside Monitoring	As required – 50 percent coverage of Sector trips will have Dockside Monitor present at offload.
Hail Trip Start	As required - to include at least VTR serial number as Trip ID number, permit number, and estimated trip duration.
Hail Trip End	As required - to include specific offload site, estimated volume by species, and time of arrival.

TABLE 3.1-2 (continued) Summary of Harvest Rules (Oct 6 09)	
Quota Management	**Brief Description of Measures**
Designated Landing Ports	In Massachusetts: Boston, Gloucester, New Bedford, Provincetown, Hyannis, Chatham, Scituate; In New Hampshire: Portsmouth, and Rye; In Maine: Portland Harbor, Cundy's Harbor, Biddeford Pool, Sebasco Harbor, and Rockland; In Rhode Island: Newport, and Point Judith..
Secondary Ports and Offloading Fish to a Truck	In Massachusetts: Woods Hole, Gloucester (Jodrey Pier, and Pier 7), Provincetown Town Pier; In New Hampshire: Portsmouth State Pier, and the Port Authority (also in Portsmouth); In Maine: Sebasco Harbor, Bar Harbor Town Dock, Southwest Harbor town dock, and Portland Harbor (Bait Lady take out, Scoala's Take out, Maine Wharf and Widgery wharf). In Rhode Island: Davisville Pier and Point Judith Pier, and in New York, Montauk
Landing Port Exceptions and Safe Harbor Protocol	Certain circumstances beyond a vessel operators control may occasionally occur which require SHS vessels to enter port somewhere other than the designated landing ports.
	Such circumstances include but are not limited to severe weather, mechanical failures, compromised hull integrity, instances of pump failures and danger of sinking, crew injury or life threatening illness, and any other emergency situations that may arise.
	In these circumstances, the vessel agrees to not offload fish until a Dockside Monitor is present, and members will (a) notify the Sector Manager, NMFS, and the Dockside Monitor in accordance with the procedures described in the Harvesting Plan (Exhibit D), and (b) pay any additional costs for the required Dockside Manager as may accrue as a result of invoking the landing port exception.

The SHS would be a group of 50 limited access Northeast multispecies permit holders who are voluntarily working together as a "Sector" under the terms described in Amendment 16 to the Northeast Multispecies FMP. These permit holders together own 129 Northeast multispecies permits, and there would be 44 active vessels operating in this sector. If approved, the FY 2010 would be the first year that the SHS would operate. The SHS would be allocated a portion of the ACL for up to 14 stocks of Northeast multispecies based on the landings history for FY 1996 – 2006 (May 1, 1996 – April 30, 2007), as approved by NMFS in Amendment 16. It is expected that the SHS would catch its allocation of most stocks.

3.1.1 Description of the Sustainable Harvest Sector and Proposed Operations

The SHS would consist of 129 permits, and 44 vessels are expected to be actively fishing in FY 2010. The SHS requests an allocation of each of the following stocks of Northeast large-mesh multispecies based on the landings history of the Sector's permits:

1. GOM cod
2. GB cod
3. GOM Haddock
4. GB Haddock

5. Redfish
6. Pollock
7. White Hake
8. Cape Cod/GOM Yellowtail Flounder
9. GB Yellowtail Flounder
10. SNE/MA Yellowtail flounder
11. GOM Winter flounder
12. GB Winter flounder
13. Witch flounder
14. American Plaice

In accordance with the Northeast Multispecies FMP, members would be operating under an ACE for allocated target stocks and have developed an Operations Plan with harvesting rules that all members would follow to avoid exceeding the SHS' allocation.

3.1.1.1 Location/Timeframe and Gear of the Sustainable Harvest Sector

Members of the SHS currently fish in all areas of the Northeast region, but primarily in the Gulf of Maine and on Georges Bank. All active SHS vessels fish in the EEZ, and most active vessels fish farther offshore, but there are a few that stay within 50 miles of the shore in the Gulf of Maine. There are two or three vessels that may fish for a portion of their allocated target stocks in the southern New England/Mid-Atlantic region.

Three quarters (36) of the vessels in the SHS fish 12 months a year. However, about 12 of the vessels of the SHS remain tied up for maintenance in the summer and fish in fall, winter, and spring for Northeast multispecies. There are a few (3) vessels that fish for Northeast multispecies in spring, summer, and fall, and go trawling for shrimp or mackerel in winter months. Additionally there are a couple of vessels that target monkfish or squid in the summer and winter. Roughly 90 percent of the vessels in the SHS use trawl gear, but there are four gillnet vessels and two vessels that may switch to hook gear to participate in the Closed Area I Hook Gear Haddock SAP.

3.1.1.2 Dividing the Allocation

The SHS would be allocated a portion of the ACL for up to 14 stocks of Northeast multispecies, based on catch history of member vessels from May 1 1996 through April 30, 2007. The allocation would be divided among active SHS vessels based on the PSC of each stock that owners' vessels contributed to the SHS allocation. SHS members would be able to trade or lease ACE with other members of the SHS. The SHS Manager would track all ACE trades. This internal allocation may vary based on trading/leasing activities among the members or decisions of the SHS Board of Directors.

3.1.1.3 Operations Plan

SHS members, showing their commitment to abide by the terms of their Operations Plan by signing the Operations Plan submitted in January 2010, agree to limit their catch (including discards) to the amount of fish allocated to the SHS for FY 2010. The SHS members have agreed to report their catch and discards of each allocated target stock to the SHS Manager daily and authorize the SHS Manager to track the Sector's catch and report to NMFS as required under Amendment 16. The members acknowledge and agree that once the SHS allocation of a stock has been caught, then no Sector member vessel would be allowed to fish in any area where that stock is found. SHS members further agree to implement all monitoring and reporting requirements as mandated in Amendment 16 and any additional requirements as decreed by their own Board of Directors.

3.1.2 Requested Exemptions from Northeast Multispecies Fishery Management Plan Regulations and Rationale

The SHS requests the following exemptions from the Northeast multispecies regulations as promulgated under Amendment 16 to the Northeast Multispecies FMP.

3.1.2.1 Universal Exemptions as specified in Amendment 16

Universal exemptions for sectors and the general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). They include the following:

- Exemption from groundfish DAS requirements including DAS reductions, differential groundfish DAS counting, the 3/15 rule for gillnets, and 24-hour DAS counting.
- Exemption from trip limits on stocks for which a sector receives an allocation of, except for the following:
    a) Halibut: trip limit would continue to be one fish per trip;
    b) No vessel, whether in the Common Pool or in any sector, would be allowed to possess any windowpane flounder (both stocks), ocean pout, wolffish, or SNE/MA winter flounder on board at any time. When caught, these species must be discarded.
- Exemption from the Georges Bank Seasonal Closure in May.
- Exemption from any additional mortality controls adopted by Amendment 16, including additional seasonal or year-round closures[3], gear requirements, DAS reductions, differential DAS counting, and/or restricted gear areas.
- Gulf of Maine Rolling Closures in specific blocks as identified in Amendment 16 (specifically Section 4.2.3.9).[4]
- Exemption from the requirement to use 6.5-inch mesh in the cod-end in haddock separator trawl/Ruhle trawl when targeting haddock in the Georges Bank Regulated Mesh Area (i.e., authorized to use 6-inch mesh in the cod-end).

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[3] NMFS is granting year-round access to the Eastern U.S./Canada Area for yellowtail flounder as stipulated, but not specified, in Amendment 16.

[4] Amendment 16 would exempt sectors from all rolling closures except for: Blocks 124 and 125 in April; Blocks 132 and 133 in April-May; Block 138 in May; Blocks 139 and 140 in May-June; and Blocks 145, 146,147, and 152 in June.

In addition to the universal exemptions, there are differences in the way sectors interact with the U.S./Canada Area and SAPs. Section 4.2.3.3.3 of the EIS for Amendment 16 (October 16, 2009) addresses how sectors would be provided a separate ACE for those stocks that have a TAC specific to the Eastern U.S./Canada Area. At present, this only applies to GB cod and GB haddock, although this measure is intended to apply to other stocks if an area-specific TAC is defined. Section 4.2.3.8 of the EIS addresses sector participation in special management programs, and stipulates that sector vessels cannot participate in special management programs unless the sector has ACE for the stocks caught in an SAP, and that the ACE must be sufficient to account for the expected catch in the SAP. This EIS section also describes sector guidelines for participating in the following SAPs: Eastern U.S./Canada Haddock SAP, Closed Area II Yellowtail Flounder SAP, and Closed Area I Hook Gear Haddock SAP.

In accordance with the proposed rule for Amendment 16 published December 31, 2009 (74 FR 69634), the requirement for 72-hour pre-trip notification will be reduced to 48 hour observer notification for all groundfish vessels. A minimum of 48-hour notification is necessary because of the additional logistical demands imposed upon the NMFS Observer Program due to the projected increase in demand for at-sea monitoring.

3.1.2.2 Sustainable Harvest Sector-Requested Exemptions

In addition to the universal exemptions, the SHS requests the following specific exemptions:

1) Exemption from the 20-day spawning block out of the fishery required for all vessels.

Description: This management measure requires vessels in the multispecies fishery to declare 20 days out of the fishery between March 1 and May 31, and was first implemented in Amendment 5 both to reduce fishing effort during an active fishing time of year and to reduce fishing effort on spawning cod and haddock.

Justification: The SHS fishing effort would, by definition, be constrained by an ACE on all allocated target stocks, so they would not be able to overfish cod and haddock. In explaining why monkfish and scallop vessels are not subject to the same 'time-out' Amendment 2 to the Monkfish FMP reads:

> *Discussion/Rationale:* The PDT reviewed the current regulations requiring vessels to take 20-day blocks out of the fishery during the spring and agreed that there is no apparent biological benefit from a 20-day-out requirement. Under the current 20-day block out of a 90 day period, a vessel still has 70 calendar days during which it could use most or all of its 40 monkfish DAS. Scallop/monkfish vessels are not subject to this requirement. As long as other fishing can occur, the benefits to spawning will not be realized, even if they cannot be measured or predicted.

Additionally, spawning aggregations are thought to occur in those areas near shore during the March – May period, which have been closed by the rolling closures in the Gulf of Maine for over 10 years, so fishermen have not been fishing on those aggregations anyway. Even with the revisions to the rolling closures proposed by the Council in Amendment 16, those inshore areas will continue to be closed, so there is little if any disruption danger to aggregations of spawning fish that may occur if this exemption is granted.

Perhaps as a result of the rolling closures and the 20-day spawning block, most fishermen do much needed maintenance during this season. Because SHS members do not intend to alter their maintenance habits, it is unlikely that they would fish the full 20 days if this exemption was granted. SHS

members do not anticipate fishing more frequently or intensively in any particular area or season due to this exemption.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

Description: First implemented in FW 20 as a means to reduce the fishing effort of Day gillnetters equitably with the reduction in DAS for trawl vessels, gillnetters declared into the Day category must take 120 days out of the fishery. These 120 days must be in blocks of a minimum of seven consecutive days; at least 21 days of this time is required to be between June 1 and September 30 of the fishing year; and finally, the spawning season time out (20-day spawning block) is credited toward the 120 days out of the fishery.

Justification: SHS anticipates that there would be no benefit to fish stocks by requiring Sector vessels to take time out of the fishery since overall SHS fishing effort would, by definition, be constrained by an ACE on all allocated target species. The SHS has five vessels that use gillnets gear.

From FW 20:

The Council is concerned that gillnet vessels may compensate for reduced allocations of time away from port (DAS) by extending the soak time between trips, thereby offsetting the conservation benefit of the regulation. Requiring gillnet vessels to declare 120 days out of groundfishing in blocks of not less than seven days will ensure that vessels remove their groundfish gear from the water for a significant period of time.

Requiring a vessel to take three 7-day blocks (which may be consecutive) during the summer months is meant to apply the time-out requirement when gillnet activity is the greatest. Most gillnet vessels fish for groundfish part-time, and allowing them to take the time out of the fishery when they do not normally fish would have no conservation benefit. The Council has determined that the seasonal restriction is necessary to ensure some effort reduction by the fleet.

The Council has considered the question of equity that has been raised about the provision requiring a seasonal period out of the fishery for only one portion of the industry. The Council notes that gillnet gear is unique in its ability to continue fishing while the vessel is in port. Thus, while the fishing mortality impact of other gear is limited primarily by the amount of DAS available, the fishing mortality impact of a gillnet is determined primarily by the amount of time it is in the water. The Council considers this unique characteristic to be justification for the gear-specific time-out requirement.[5]

3) Increase the limit on the number of gillnets allowed in the Day gillnet category to 150, and standardization of gillnet tagging requirements.

Description: Day Category gillnet fishermen are restricted to 150 tags on 100 nets in the Gulf of Maine, 100 tags and 50 nets on Georges Bank, and 150 tags and 75 nets in the southern New England Regulated Mesh Areas (RMAs). In Georges Bank and southern New England RMAs, gillnetters can use any combination of flatfish and roundfish gillnets; in the Gulf of Maine, they are restricted to no more than 50 roundfish nets.

Clarified Request: The Day category gillnetters of the SHS request to fish up to 150 nets, in any combination in the Gulf of Maine, and that they be required to put one tag per net on all nets so they would no longer have to move tags from net to net when they decide to change their fishing

[5] Framework Adjustment 20 to the Northeast Multispecies Fishery Management Plan, pp 18-19

configuration. Having to put two tags on roundfish nets and only one tag on flatfish nets when being restricted in how many nets they fish would add a significant burden on the fishermen.

Justification: Like the 120-day block, a cap on the number of gillnets a vessel is allowed to fish was implemented in FW 20, with subsequent revisions to the numbers and types of nets allowed to be fished. The net cap was part of the Council's two-pronged approach to controlling fishing effort by the gillnet fleet.

From FW 20:

> **Purpose and intent of proposed modifications to the gillnet plan**
> The purpose and intent of this proposal is to improve control of gillnet fishing effort by regulating both DAS and the amount of gear fished….
>
> **Rationale for a net cap**
> The Gillnet Subcommittee focused on three principal issues in addressing the Council's directive to develop a measure based on net reductions:…[by] 3) establishing a measurable relationship between net reductions and target fishing mortality reductions…
>
> The Council's intent in capping the number of nets is to: 1) prevent uncontrolled increases in numbers of nets used by vessels in response to reductions in days at sea, and 2) establish, over time, a standardization in numbers of nets in use that could be used in the future as a measurably adjustable component of an effort reduction program in addition to DAS…

Under this Operations Plan, the SHS would limit its catch primarily via the output control of an ACE, rather than input controls of the DAS system which, in the case of the gillnet fishery, included limits on both DAS, and the amount of gear that could be fished on those DAS. Because all Sector members would be limited by an ACE on all allocated stocks, it would not be necessary to limit the numbers of nets as a means to limit gillnet harvest. However, the Sector is mindful of concerns over ghost fishing gear and potential gear conflicts, and is therefore willing to limit itself to a cap of 150 nets per vessel. Additionally, SHS Day gillnetters would continue to comply with all requirements under the Harbor Porpoise plan. SHS members have indicated that they do not anticipate fishing more frequently in any particular area or season as a result of this exemption.

The following section addresses specific concerns raised during Operations Plan development:

A. Ghost Fishing

For the purposes of this EA, ***ghost fishing*** is the term used for lost or abandoned fishing gear that continues to catch fish. This justification addresses any concerns that being granted an exemption from certain gillnet requirements would not increase 'ghost fishing.'

By using additional nets, gillnet vessels would be able to increase their efficiency because they would be able to haul more nets in a day; thereby harvesting their allocation more quickly. By harvesting their allocations in fewer days on the water, they would reduce the total soak time, which should lead to less overall fishing time and therefore fewer potential interactions with protected species and a reduction in the potential for ghost fishing.

Additionally, fishermen would have no incentive to leave gear out for an extended period of time because it is continually at risk of being run over and lost, is expensive to replace, decreases the quality of fish caught in the net, and increases the risk of predation by dogfish and other predators. Finally, net limits on the Day gillnet category are an artifact of the DAS system. The use of additional nets would

increase fishing efficiency. Allowance of additional nets would reduce soak time as gillnet vessels increase efficiency and potentially catch/land their allocation in fewer days on the water.

B. Equity

There would be five gillnetters in the SHS, and four of them would fish under the Day category in FY 2010. Under Common Pool regulations, these Day gillnetters do not have to haul their gear in at the end of the day, (although they are limited by the number of nets).

Under Sector management, these vessels are requesting to be exempt from this limit on the number of nets. Therefore, concerns were raised that this exemption could raise equity issues if increased protected species interactions due to longer soak time or gear left untended to hold fishing ground triggered management actions that affected the entire fishery. As mentioned above, by using additional nets, gillnetters would be able to increase their efficiency because they would be able to haul more nets in a day, which decreases soak time, and could allow members to harvest their allocation in a shorter period. Therefore, while there may be more nets in the water during high fishing season at any one time, the overall amount of time the gillnets are in the water could be reduced because as soon as they reach their ACE for an allocated species, they would stop fishing.

Further, while gillnetters generally haul their gear within 48 hours of setting the gear, a SHS harvest rule (that all members must comply with) states that gear would not be left out for more than 7 days, and would not be stored in the water. Further, the SHS harvest rules and the fact that the SHS only has four Day category gillnetters should alleviate concerns about the equity of holding prime fishing grounds during peak summer months.

In addition, gillnetters in the SHS would continue to comply with all protected species regulations, including revised requirements, where applicable, in the Harbor Porpoise Take Reduction Plan (HPTRP) proposed rule (74 FR 36058; July 21, 2009).

Generally speaking, the Council and NMFS are promulgating a dual management system for the commercial multispecies fleet. The portion of the fleet that enrolls in a sector would be constrained by an ACE on all allocated target stocks and would be required to report weekly. The Common Pool would not be constrained by an ACE and would continue to be limited by DAS, trip limits, and limits on the number of nets. Therefore, the SHS does not believe there is an equity issue by allowing Sector gillnetters to fish with more nets.

4) ***Exemption from the length and horsepower restrictions on DAS leasing***

Description: Currently multispecies vessels are allowed to lease DAS from other vessels within certain limits of their baseline characteristics. Approving this request would allow members of the SHS to lease DAS from other SHS participating vessels, and vessels of any other sector that is granted this exemption, without regard to baseline. If approved, the only other sector that could lease DAS to or from SHS would be the Tri-State sector since they are the only other sector to also request this exemption.

Justification: The DAS leasing restrictions were imposed as a means of maintaining the character of the fleet. DAS would only be used by the SHS members for the purpose of complying with the Monkfish FMP.[6] Sector members want to have sufficient DAS to retain the monkfish bycatch that is allowed (in the monkfish Northern Fishery Management Area) for vessels on a DAS, in order to prevent the discard of monkfish that would likely occur if vessels do not have sufficient DAS to retain them.

[6] Certain categories of monkfish permits must use a groundfish DAS when using a monkfish DAS (NEFMC 2009).

Retaining the existing vessel size restrictions within the small pool of potential lessors and lessees the Sector represents would greatly limit the ability of vessels to lease DAS and likely increase monkfish discards. Internal SHS redistribution would cease after March 1st of FY 2011 in order to provide for administrative action and time to fish the DAS. This element enhances flexibility of membership with respect to their DAS allocations and allows the SHS to pursue scales of efficiency to offset resource depletion and increasing overhead costs. This would maximize the opportunity of Sector members to harvest their ACE to their fullest potential while managing overfishing of allocated species. SHS members do not anticipate fishing more frequently or intensively in any particular area or season due to this exemption.

3.2 ALTERNATIVE 2 - NO-ACTION ALTERNATIVE

Under the No-Action Alternative, all SHS vessels would operate under the regulations applicable to the Common Pool. Under this alternative, all SHS vessels would remain in the Common Pool under the rules implemented in Amendments 13 and 16, and framework adjustments to the Northeast Multispecies FMP. The SHS would not have an allocation of Northeast multispecies. The No-Action Alternative would subject all SHS vessels to the input control measures, implemented by Amendment 13, subsequent FW adjustments, and Amendment 16 to rebuild overfished stocks and end overfishing on those stocks where it is occurring.

Under measures proposed by Amendment 16, Common Pool vessels would be subject to a 50 percent cut in DAS from their FW 42 allocation and having all DAS counted at a rate of 24-hours. Additionally, trip limits for overfished stocks are being adjusted, ACLs and AMs are being implemented, and it is possible that many vessels currently in the fishery would not be economically viable.

The preferred alternatives for Common Pool operations are described in Amendment 16, *Final Amendment 16 to the Northeast Multispecies Fisheries Management Plan, including a Final Supplemental Environmental Impact Statement and Initial Regulatory Flexibility Analysis*, and Framework 44, and are hereby incorporated by reference (NEFMC 2009a).

3.3 ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER ANALYSIS

Alternatives that were rejected from further consideration are described below.

3.3.1 Sector Formation without Sector-specific Exemptions

The SHS considered an alternative similar to Alternative 1, although under this alternative, only the universal exemptions for sectors would be adopted, and the SHS would not request any additional exemptions. Universal exemptions are described in Section 3.1.2.1. The SHS would still be required to develop an Operations Plan, would request an allocation of 14 groundfish stocks, and would implement monitoring and reporting requirements identified in Amendment 16. Under this alternative, there would be no exemptions associated with monkfish, fishing blocks, and gillnet requirements (as described in Section 3.1.2.2). This alternative would simplify the operation and monitoring of a new sector in its initial year, and allow for more flexibility than vessels operating under the Common Pool. However, after further consideration, it is unlikely that Sector members would be able to generate enough revenue to contribute to the costs associated with Sector membership without the additional exemptions, while remaining economically viable.

3.3.2 Request Access to Gulf of Maine Rolling Closure Block 138 in May

Access to the GOM rolling closure Block 138 in May was an alternative that was considered but rejected from further analysis because the Northeast Fishery Science Center (NEFSC) survey data (2006-2008) indicate that moderate concentrations of cod were found in this block in May. It is believed that these rolling closure areas offer protection to spawning cod aggregations. Potential targeted fishing of spawning aggregations has impacts to stocks beyond the immediate individual mortality Furthermore, in addition to spawning protections, some of these areas also provide protection for marine mammals. Accordingly, this exemption was considered but rejected from further analysis. See the proposed and final rules for sectors for additional information.

4.0 AFFECTED ENVIRONMENT

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

4.1 PHYSICAL ENVIRONMENT/HABITAT/EFH.

The Northeast U.S. Shelf Ecosystem (Figure 4.1-1) 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 seaward 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 SHS would 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).

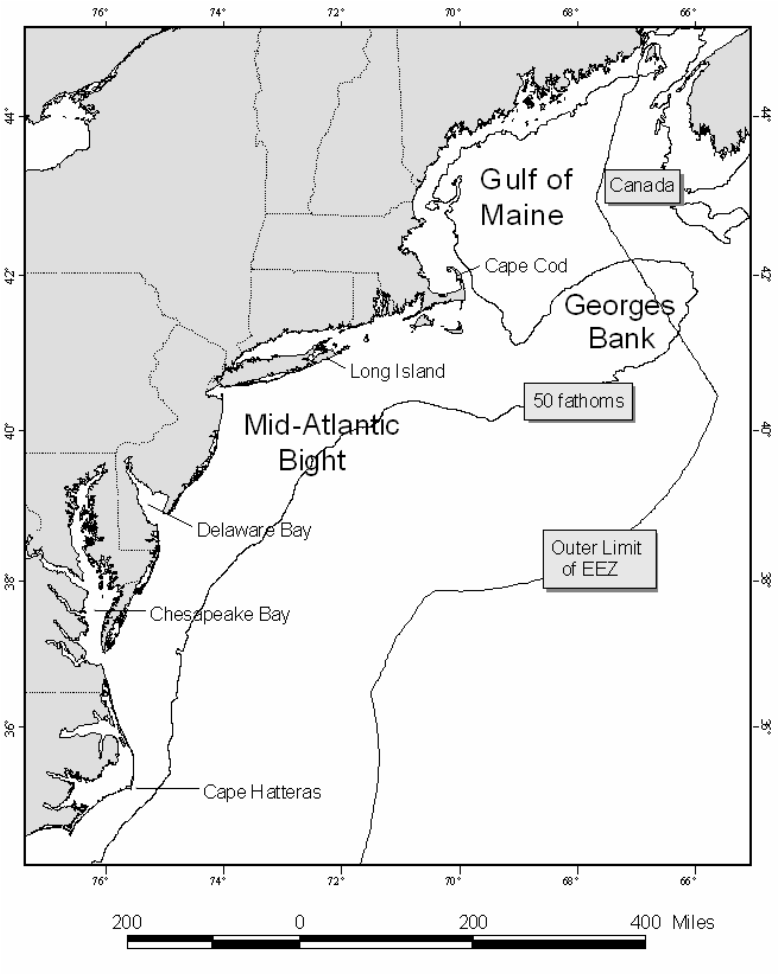


Figure 4.1-1 Northeast U.S Shelf Ecosystem

4.1.1 Affected Physical Environment

4.1.1.1 Gulf of Maine

The Gulf of Maine is 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 4.1.1-1). 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.

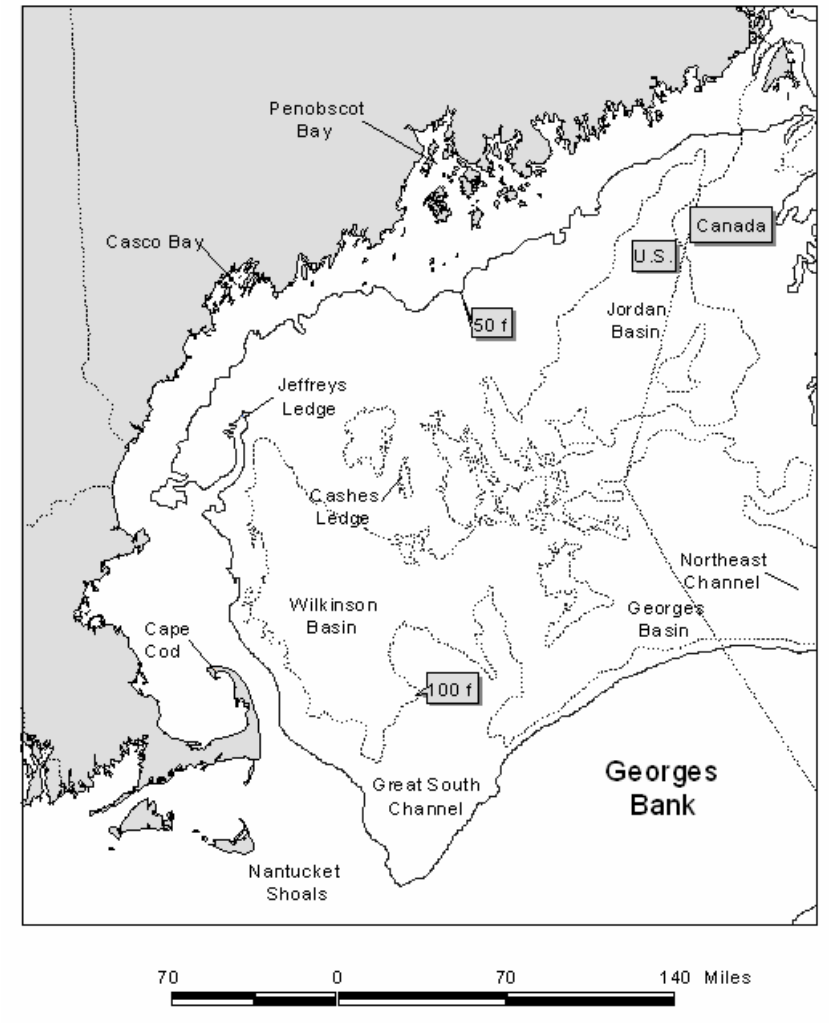


Figure 4.1.1-1 Gulf of Maine

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,[7] sometimes with boulders, predominates others. Bedrock is the predominant substrate along the western edge of the Gulf of Maine, north of Cape Cod in a narrow band out to a water depth of about 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

[7] 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.

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 Water:[8] 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 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 common[9] demersal fish species by assemblages in the Gulf of Maine and Georges Bank:

- Deepwater/Slope and Canyon: offshore hake, blackbelly rosefish, Gulf stream flounder;
- Intermediate/Combination of Deepwater Gulf of Maine-Georges Bank and Gulf of Maine-Georges Bank Transition: silver hake, red hake, goosefish (monkfish);
- Shallow/Gulf of Maine-Georges Bank Transition Zone: Atlantic cod, haddock, pollock;

[8] 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.

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

- 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.

4.1.1.2 Georges Bank

Georges Bank is a shallow (3 to 150 m depth), elongated (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 reduce 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 deep water (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 depths and current strength and includes coarse sediments, consisting mainly of gravel and coarse sand with interspersed boulders, cobbles, and pebbles. Fauna tend to be sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms.

- 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.

4.1.1.3 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 polycheates and was defined for sandy sediments (1 percent or less silt) that are at least occasionally disturbed by waves, from shore out to a depth of about 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.[10]

- 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.

4.1.2 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 4.1.2-1 briefly summarizes the habitat requirements for each of the 13 large-mesh groundfish species managed by the

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

Northeast Multispecies FMP, some of which consist of multiple stocks within the Northeast Multispecies FMP. Information for this table was extracted from the original Northeast Multispecies 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 4.1.2-1). 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 4.1.2-1.

TABLE 4.1.2-1
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)	(J): Cobble or gravel bottom substrates	Otter trawl, longlines, gillnets
			(A): 10-150 m (33-492 ft)	(A): Rocks, pebbles, or gravel bottom substrate	
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)	(J): Pebble and gravel bottom substrates	Otter trawl, longlines, gillnets
			(A): 40-150 m (131-492 ft)	(A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches	
Acadian redfish	Gulf of Maine, deep portions of Georges Bank and Great South Channel	Crustaceans	(J): 25-400 m (82-1,312 ft)	(J): Bottom habitats with a substrate of silt, mud, or hard bottom	Otter trawl
			(A): 50-350 m (164–1,148 ft)	(A): Same as for (J)	
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)	(J): Bottom habitats with aquatic vegetation or substrate of sand, mud, or rocks	Otter trawl, gillnets
			(A): 15-365 m (49-1,198 ft)	(A): Hard bottom habitats including artificial reefs	

TABLE 4.1.2-1 (continued)
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	
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	

TABLE 4.1.2-1 (continued)
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	
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)	
American plaice	Gulf of Maine, Georges Bank	Polychaetes, crustaceans, mollusks, echinoderms	(J): 45-150 m (148-492 ft)	(J): Bottom habitats with fine grained sediments or a substrate of sand or gravel	Otter trawl
			(A): 45–175 m (148-574 ft)	(A): Same as for (J)	
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)	(J): Bottom habitats with fine grained substrate	Otter trawl
			(A): 25-300 m (82-984 ft)	(A): Same as for (J)	
Winter flounder	Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England	Polychaetes, crustaceans	(E): <5 m (16 ft)	(E): Bottom habitats with a substrate of sand, muddy sand, mud, and gravel	Otter trawl, gillnets
			(J): 0.1-10 m (0.3-32 ft) (1-50 m age 1+) (3.2-164 ft)	(J): Bottom habitats with a substrate of mud or fine grained sand	
			(A): 1-100 m (3.2-328 ft)	(A): Bottom habitats including estuaries with substrates of mud, sand, gravel	

TABLE 4.1.2-1 (continued)
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 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.

4.1.3 Essential Fish Habitat (EFH)

EFH is defined by the SFA 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 4.1.2-1. 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.

4.1.4 Gear Types and Interaction with Habitat

The SHS would fish for target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines) as part of the FY 2010

operations. This section discusses the characteristics of each of the proposed gear types as well as the typical impacts to the physical habitat associated with each of these gear types.

4.1.4.1 Gear Types

The characteristics of typical gear types used by the multispecies fishery are summarized in Table 4.1.4-1.

TABLE 4.1.4-1
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	295 ft long per net.	~1,476 ft.	Varies by target species
Lines	N/A	Leadline and floatline with webbing (mesh) connecting	Mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches 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 Danforth-style anchors are required at each end of the net string	20-24 lb 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

Trawl Gear

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

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.

Although there are three general types of bottom trawl used in the Northeast Region, 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 (Northeast Region Essential Fish Habitat Steering Committee [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 tend to 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).

Gillnet Gear

The SHS would also use 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 leadline, webbing, and floatline. In New England, leadlines 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 leadlines have the most contact with the bottom. For New England groundfish, frequency of tending gillnets ranges from daily to semiweekly (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. The meshes of individual gillnets are uniform in size and shape, hence highly selective for a particular size of fish (Jennings et al. 2001). Bottom gillnets are fished in two

different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets 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 set with the floatline tied to the leadline at 6-ft intervals, so that the floatline is close to the bottom, and the net forms a limp bag between each tie. They are left in the water for 3-4 days, and are used to catch flounders and monkfish.

Hook and Line Gear

Hand Lines/Rod and Reel

The SHS would also use handlines. 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.

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 attract a fish 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.

Longlines

The remaining gear type that would be used by the SHS are bottom longlines, which consist of a long length of line to which short lengths of line ("gangions") carrying baited hooks are attached. Longlining is undertaken for a wide range of bottom species. Bottom longlines typically have up to six individual longlines strung together for a total length of more than 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).

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).

4.1.4.2 Gear Interaction with Habitat

Historically, commercial fishing in the region has been conducted using trawls, gillnets, and longline gear. 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) (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 ICES and National Research Council 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).

4.2 ALLOCATED TARGET SPECIES

This section describes the species life history and stock population status for each of the 14 fish stocks that are managed under the Northeast Multispecies FMP, which would be harvested by the SHS as allocated target species under provisions of the FMP. The description of species habitat associations described in Section 4.1 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 SHS intends to use (as described in Section 4.1.6.2) and allocated target species. The following discussions have been adapted from the GARM III report (NEFSC 2008) and can be accessed via the NEFMC website at http://www.nefmc.org.

4.2.1 Species and Stock Status Descriptions

The allocated target stocks for the SHS are:

- GOM Cod
- GB Cod
- GOM Haddock
- GB Haddock
- American Plaice
- Witch Flounder
- GOM Winter Flounder
- GB Winter Flounder
- Cape Cod/GOM Yellowtail Flounder
- GB Yellowtail Flounder
- SNE/MA Yellowtail Flounder
- Redfish
- Pollock
- White Hake

Spiny dogfish, skates, and monkfish may also be affected by the Proposed Action and are considered in this EA as "non-allocated target species and bycatch" in Sections 4.3 and 5.1.3. 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/MA winter flounder are non-allocated species that are also managed under the Northeast Multispecies FMP. Sector and Common Pool vessels are permitted to retain 1 halibut per trip. Wolffish have been provisionally added to the list of stocks managed 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.

4.2.1.1 Gulf of Maine Cod

Life History: The Atlantic cod, *Gadus morhua*, is a demersal gadoid species found on both sides of the North Atlantic. In the western North Atlantic, cod occur from Greenland to North Carolina. In U.S. waters, cod are assessed and managed as two stocks: Gulf of Maine and Georges Bank. GOM cod attain sexual maturity at a later age than GB cod, which is related to differences in growth rates between the two stocks. The greatest concentrations of cod off the Northeast coast of the United States are on rough bottoms in waters between 10 and 150 m and at temperatures between 0 and 10°C. Spawning occurs year-round, near the ocean bottom, with a peak in winter and spring. Peak spawning is related to water temperatures between 5 and 7°C. It is delayed until spring when winters are severe and peaks in winter when mild. Eggs are pelagic, buoyant, spherical, and transparent, 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 they descend to the seafloor. Most remain on the bottom after this descent, and there is no evidence of a

subsequent diel, vertical migration. Adults tend to move in schools, usually near the bottom, but also occurring in the water column.

Population Status: The inshore GOM stock appears to be relatively distinct from the offshore cod stocks on the banks of the Scotian Shelf and Georges Bank based on tagging studies. GOM cod spawning stock biomass has increased since the late 1990's from 11,100 metric tons (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.

4.2.1.2 Georges Bank Cod

Life History: The GB cod stock, *Gadus morhua,* is the most southerly cod stock in the world. The greatest concentrations off the Northeast coast of the United States are on rough bottoms in waters between 10 and 150 m and at temperatures between 0 and 10°C. Spawning occurs year-round, near the ocean bottom, with a peak in winter and spring. Peak spawning is related to water temperatures between 5 and 7°C. It is delayed until spring when winters are severe and peaks in winter when mild. Eggs are pelagic, buoyant, spherical, and transparent 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 occur in the water column.

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

4.2.1.3 Gulf of Maine Haddock

Life History: The GOM haddock, *Melanogrammus aeglefinus*, is a commercially-exploited groundfish found in the North Atlantic Ocean. This demersal gadoid species is distributed from Cape May, New Jersey to the Strait of Belle Isle, Newfoundland in the western North 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 are highly fecund broadcast spawners. Haddock spawn over various substrates including rocks, gravel, smooth sand, and mud. 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. 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.

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

4.2.1.4 Georges Bank Haddock

Life History: The general life history of GB haddock, *Melanogrammus aeglefinus,* is comparable to the GOM haddock as described above. On Georges Bank, spawning occurs from January

to June, usually peaking from February to early-April. Georges Bank is the principal haddock spawning area in the Northeast U.S. Shelf Ecosystem. GB haddock spawning 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 GOM fishery does not target haddock and is directed mostly at flatfish for which the fleet uses large square (6.5 inch) mesh gear, which leads to reduced selectivity on haddock. The GOM haddock have lower weights at age than the GB stock and the age at 50 percent maturity was also lower for GOM haddock as compared to GB 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.

4.2.1.5 American Plaice

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

4.2.1.6 Witch Flounder

Life History: The witch flounder, *Glyptocephalus cynoglossus*, is a demersal flatfish distributed on both sides of the North Atlantic. In the western North Atlantic, the species ranges from Labrador southward, and 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 are overfished and overfishing is occurring.

4.2.1.7 Gulf of Maine Winter Flounder

Life History: The winter flounder, *Psuedopleuronectes americanus*, is a demersal flatfish distributed in the western North Atlantic from Labrador to Georgia. Important U.S. commercial and recreational fisheries exist from the Gulf of Maine to the Mid-Atlantic Bight. 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. 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. 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. 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.

Population Status: While the parameters of status determination criteria are presented in Table 12 of Amendment 16, the exact status determination for GOM winter flounder is unknown. Fishing mortality for this stock is likely above the level that would produce maximum sustainable yield, which typically indicates that overfishing is occurring.

4.2.1.8 Georges Bank Winter Flounder

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

Population Status: The stock is likely in an overfished condition and overfishing is probably occurring.

4.2.1.9 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 western North Atlantic, spawning occurs from March through August at temperatures of 5 to 12°C. Spawning takes place along continental shelf waters northwest of Cape Cod. Yellowtail flounder spawn buoyant, spherical, pelagic eggs that lack an oil globule. Pelagic larvae are brief residents in the water column; 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.

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 in 2009. Spawning stock biomass has increased the past few years.

4.2.1.10 Georges Bank Yellowtail Flounder

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

Population Status: GB yellowtail flounder continues to be overfished and overfishing is continuing.

4.2.1.11 Southern New England/Mid-Atlantic Yellowtail Flounder

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

Population Status: 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 recently at the lowest levels observed in the time series in 2009.

4.2.1.12 Redfish

Life History: The Acadian redfish, *Sebastes fasciatus* Storer, and the deepwater redfish, *S. mentella* Travin, are virtually indistinguishable from each other based on external characteristics. Deepwater redfish are less prominent in the more southerly regions of the Scotian Shelf and appear to be virtually absent from the Gulf of Maine 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 are 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 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. In general, 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.

4.2.1.13 Pollock

Life History: Pollock, *Pollachius virens*, occur on both sides of the North Atlantic. In the western North Atlantic, the species is most abundant on the western Scotian Shelf and in the Gulf of Maine. There is considerable movement of the species between the Scotian Shelf, Georges Bank, and the

Gulf of Maine. Although some differences in meristic and morphometric characters have been shown, there are no significant genetic differences among areas. As a result, they are assessed as a single unit. The principal pollock spawning sites in the western North Atlantic are in the western Gulf of Maine, Great South Channel, Georges Bank, and on the Scotian Shelf. Spawning takes place from September to April. Spawning time is more variable in northern sites than in southern sites. Spawning occurs over hard, stony, or rocky bottom. Spawning activity begins when the water column cools to near 8^{o}C, and peaks when temperatures are approximately 4.5 to 6^{o}C. Thus, most spawning occurs within a comparatively narrow range of temperatures.

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, adult pollock are fairly stationary in the Gulf of Maine and along the Nova Scotian coast. Male pollock reach sexual maturity at a larger size and older age than females. Age and size at maturity of pollock have declined in recent years, a trend that has also been reported in other marine fish species (e.g., haddock, witch flounder).

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

4.2.1.14 White Hake

Life History: The white hake, *Urophycis tenuis*, occurs from Newfoundland to southern New England and is common on muddy bottom throughout the Gulf of Maine. The depth distribution of white hake varies by age and season; 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. The northern spawning group of white hake spawns in late summer (August-September) in the southern Gulf of St. Lawrence and on the Scotian Shelf. The timing and extent of spawning in the Georges Bank - Middle Atlantic spawning group has not been clearly determined. The eggs, larvae, and early juveniles are pelagic; older 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.

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

4.2.2 Assemblages of Fish Species

Georges Bank and the Gulf of Maine have been historically characterized by high levels of fish production. Several studies have identified demersal fish assemblages over large spatial scales. Overholtz and Tyler (1985) found five depth-related groundfish assemblages for Georges Bank and the Gulf of Maine that were persistent temporally and spatially. 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 4.2.2-1 (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 species, and non-allocated target species and bycatch. As presented in Table 4.2.2-1, the terminology and definitions of habitat types vary slightly between the two studies. For further information on fish habitat relationships, see Table 4.1.2-1.

TABLE 4.2.2-1
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

4.2.3 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 4.2.3-1). 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 listed in Table 4.2.3-1 include the 14 target stocks allocated under the Northeast Multispecies FMP that could be impacted to various degrees by SHS fishing activities.

TABLE 4.2.3-1 Status of the Northeast Groundfish Stocks in 2007(GARM III)	
Stock Status	**Stock Status (GARM III)**
Overfished and Overfishing Biomass < ½ B_{MSY} and F > F_{MSY}	GB Cod GB Yellowtail Flounder SNE/MA Yellowtail Flounder Cape Cod/GOM Yellowtail Flounder SNE/MA Winter Flounder White Hake Pollock Witch Flounder GB Winter Flounder Northern Windowpane
Overfished but not Overfishing Biomass < ½ B_{MSY} and F < F_{MSY}	Ocean Pout Halibut
Not Overfished but Overfishing Biomass > ½ B_{MSY} and F > F_{MSY}	GOM Cod Southern Windowpane
Not Overfished and not Overfishing Biomass > ½ B_{MSY} and F < F_{MSY}	Redfish Plaice GB Haddock GOM Haddock
Unknown	GOM Winter Flounder

Notes:

B_{MSY} = biomass necessary to produce maximum sustainable yield

F_{MSY} = fishing mortality rate that produces the maximum sustainable yield

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. The stock of GB haddock is rebuilt, and GOM haddock, Acadian redfish, and American plaice are no longer overfished or experiencing overfishing, 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.

4.2.4 Areas Closed to Fishing within the Sustainable Harvest Sector 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.

Figure 4.2.4-1 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.

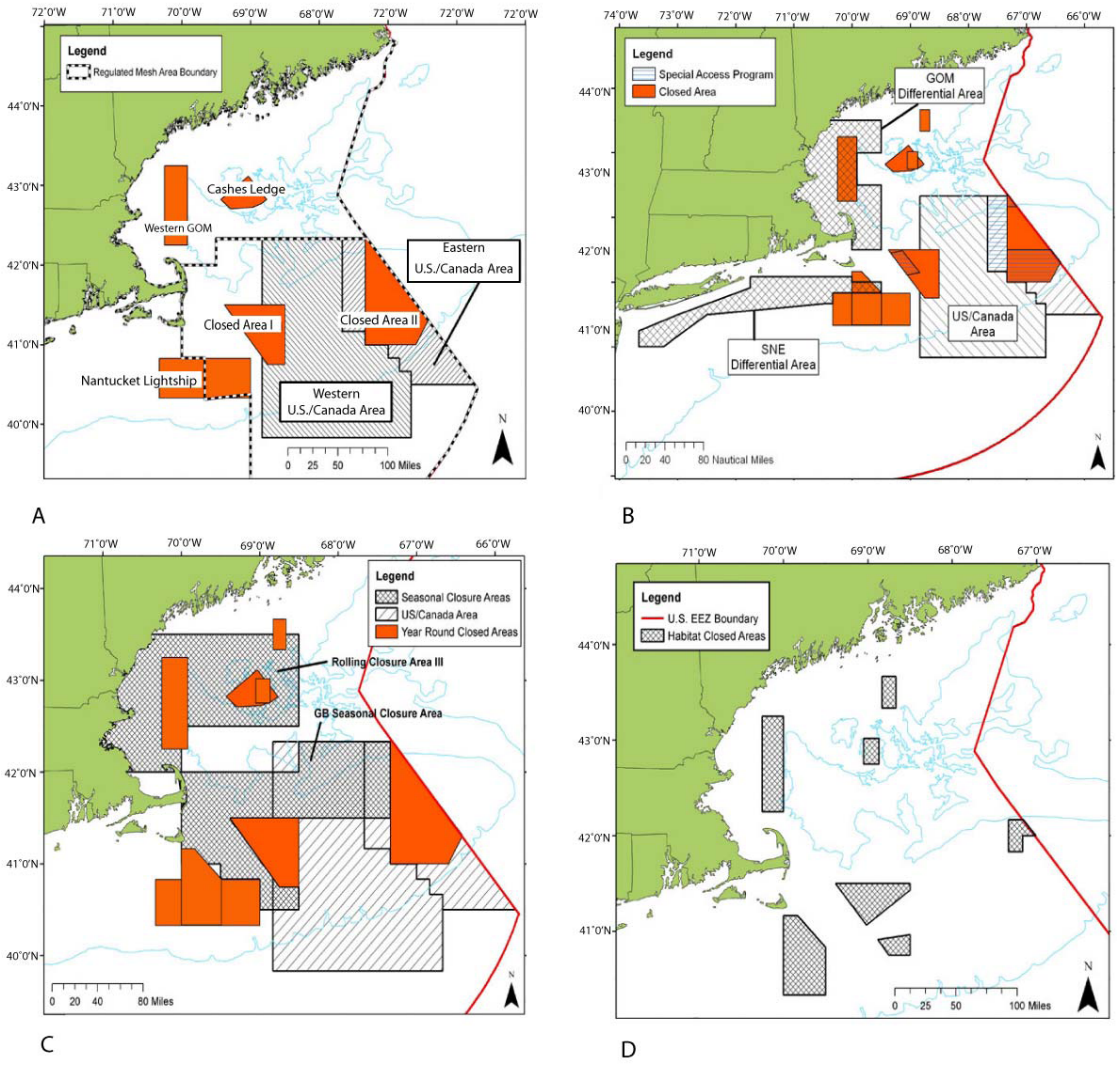


Figure 4.2.4-1 Northeast Multispecies Closed Areas and United States/Canada

4.2.5 Interaction between Gear and Allocated Target Species

The SHS is a proposed Sector with no history of operations; therefore, the analysis of interactions between gear and allocated target 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 4.2.5-1) 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. SHS vessels would mostly be fishing with trawls with approximately 10 percent of the fishing vessel fishing by gillnet. Longline fishing could be conducted to selectively target haddock in keeping with an approved Operations Plan.

4.3 NON-ALLOCATED TARGET SPECIES AND BYCATCH

Non-allocated target species and bycatch are defined in Section 2.0 and may include a broad range of species. For purposes of this assessment, and following the convention established in Amendment 16, the non-allocated target species and bycatch most likely to be affected by the SHS Operations Plan include spiny dogfish, skates, and monkfish. As indicated in Table 87 of the Final EIS for Amendment 16, these were the top three non-groundfish species landed by multispecies vessels in FY 2006 and FY 2007 under the Category B (regular) DAS program. These species have no allocation under the Northeast Multispecies FMP and are managed under separate FMPs. Monkfish and skates are commonly landed when caught. Spiny dogfish, which tend to be relatively abundant in catches, may be landed but are often the predominant component of the discarded bycatch. Monkfish may be discarded when regulations or market conditions constrain the amount of the catch that can be landed.

4.3.1 Spiny Dogfish

Life History: The spiny dogfish, *Squalus acanthias*, is 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.

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

TABLE 4.2.5-1
Landings (mt) for Allocated and Non-allocated Target Species and Bycatch by Gear Type from Fishing Year 1996 to Fishing Year 2006 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
Southern 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
Southern 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
White Hake	22,532			9,355	239					2,191		2,173	32,547
Pollock												N/A	51,568
Acadian Redfish												6,200	4,115

TABLE 4.2.5-1 (continued)
Landings (mt) for Allocated and Non-allocated Target Species and Bycatch by Gear Type from Fishing Year 1996 to Fishing Year 2006 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
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

4.3.2 Skates

Life History: The seven species in the Northeast Region skate complex are: little skate (*Leucoraja erinacea*), winter skate (*L. ocellata*), barndoor skate (*Dipturus laevis)*, thorny skate (*Amblyraja radiata*), smooth skate (*Malacoraja senta*), clearnose skate (*Raja eglanteria*), and rosette skate (*L. garmani*). The barndoor skate is 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 (http://www.nefmc.org/skates/fmp/fmp.htm). Possession prohibitions of barndoor, thorny, and smooth skates in the Gulf of Maine were also provisions of the FMP. A trip limit of 10,000 pounds (lbs) was implemented for winter skate, and a Letter of Authorization is needed for the bait fishery (little skate) to exceed trip limits. Amendment 3, which updates the Skate FMP, also serves as a current Stock Assessment and Fishery Evaluation (SAFE) Report (NEFMC 2009b).

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.

4.3.3 Monkfish

Life History: Monkfish, *Lophius americanus*, also called goosefish, 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 generally 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 that 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 Monkfish FMP defines two management areas for monkfish (northern and southern), divided roughly by an east-west line bisecting Georges Bank. Monkfish in both management regions are not overfished and overfishing is not occurring.

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

The SHS is a proposed Sector with no history of operations; therefore, the analysis of interactions between gear and non-allocated target species and bycatch 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 gillnets, which are described in detail in Amendment 2 to the Monkfish FMP (NEFMC and MAFMC 2003). These same gear types are used in groundfishing planned by the SHS.

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 by the SHS for groundfish. Detailed information about skate fisheries, gear, and conduct can be found in the recent NEFMC Amendment to the Skate FMP and accompanying FSEIS (NEFMC 2009b).

Of the non-allocated target species and bycatch considered in the EA, dogfish have the potential for an interaction with all gear types expected to be used by the SHS. Historic landings for non-allocated target species and bycatch from FY 1996 to FY 2006 (Table 4.3.4-1) show that the majority of fish of all species are caught with otter trawls.

TABLE 4.3.4-1
Landings (mt) for Non-allocated Target Species and Bycatch by Gear Type from Fishing Year 1996 to Fishing Year 2006[a]

	Gear Type								
	Trawl		Gillnet		Dredge		Other Gear[b]	Total	
Species	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.

4.4 PROTECTED RESOURCES

There are numerous protected species that inhabit the environment within the Northeast Multispecies FMP management unit, and that therefore potentially occur in the operations area of the SHS. These species 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. As listed in Table 4.4.1-1, 13 marine mammal, sea turtle, and fish species are classified as endangered or threatened under the ESA; the remaining species in Table 4.4.1-1 are protected by the MMPA and are known to interact with the Northeast multispecies fishery. Non ESA-listed species protected by the MMPA that utilize this environment and have no documented interaction with the Northeast multispecies fishery will not be discussed in this statement.

4.4.1 Species Present in the Area

Table 4.4.1-1 lists the species, protected either by the ESA, the MMPA, or both, that may be found in the environment that would be utilized by the SHS.

TABLE 4.4.1-1
Species Protected Under the Endangered Species Act and/or Marine Mammal Protection Act that May Occur in the Operations Area for the Sustainable Harvest Sector

Species	Status
Cetaceans	
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sperm whale (*Physeter macrocephalus*	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Pilot whale (*Globicephala spp*.)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Spotted dolphin (*Stenella frontalis*)	Protected
Bottlenose dolphin (*Tursiops truncatus*)[a]	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected

TABLE 4.4.1-1 (continued)
Species Protected Under the Endangered Species Act and/or Marine Mammal Protection Act that May Occur in the Operations Area for the Sustainable Harvest Sector

Species	Status
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered[b]
Loggerhead sea turtle (*Caretta caretta*)	Threatened
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandicus*)	Protected
Hooded seal (*Cystophora cristata*)	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 they occur in U.S. waters.

4.4.2 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, and thus the SHS. 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 longlines) 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).

4.4.2.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras, North Carolina. 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).

4.4.2.2 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. The SAR also provided information on the estimated annual human-caused mortality and serious injury, as well as 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 whales) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf of Maine and Georges Bank, and low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is a simplification 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 along the east coast of Canada, particularly in the Gulf of St. Lawrence, and occur only infrequently within the U.S. EEZ (Waring et al. 2002).

For North Atlantic right whales, the available information suggests that the population increased at a rate of 1.8 percent per year between 1990 and 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, an average of 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 low (Waring et al. 2009). The best estimate for the GOM stock of humpback whales is 847 whales (Waring et al. 2009). The population trend is considered positive for the GOM 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). Insufficient data exist to determine trends for any other large whale species.

The Atlantic Large Whale Take Reduction Plan (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 risk of large whales (right, humpback, and fin whales, and acknowledge benefits to minke whales) in commercial fishing gear and to reduce the risk of death and serious injury from entanglements that do occur.

4.4.2.3 Small Cetaceans

Numerous small cetacean species (dolphins, pilot whales, and harbor porpoise) that occur within the area from Cape Hatteras through the Gulf of Maine are known to interact with Northeast multispecies fishing gear. Seasonal abundance and distribution of each species off the coast of the Northeast United States varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white-sided dolphin, 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, and spotted dolphin). Information on the western North Atlantic stocks of each species is summarized in Waring et al. (2009).

4.4.2.4 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 off 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).

4.4.3 Species Not Likely to be Affected

NMFS has determined that the action being considered in the EA (i.e., approval of the SHS Operations Plan) is not likely to adversely affect shortnose sturgeon, the GOM 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. The following discussion provides the rationale for these determinations.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. They 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 SHS would not operate in or near the rivers where concentrations of shortnose sturgeon are most likely found, it is highly unlikely that the SHS would affect shortnose sturgeon.

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

The hawksbill turtle is uncommon in the waters of the continental United States. 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 SHS 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. 2002). In the North Atlantic region, blue whales are most frequently sighted from April to January (Sears 2002). No blue whales were observed during the Cetacean and Turtle Assessment Program (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 SHS would operate. Blue whales feed on euphausiids (krill) that are too small to be captured in fishing gear. There were no observed fishery-related mortalities or serious injuries to blue whales between 1996 and 2000 (Waring et al. 2002). Given that the species is unlikely to occur in areas where the SHS would operate, and given that the operation of the Sector 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. 2007). 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). In contrast, the SHS would operate in continental shelf waters. The average depth over which sperm whale sightings occurred during the CeTAP surveys was 1,792 m (CeTAP 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 1,000 m and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin et al. 2002). There were no observed fishery-related mortalities or serious injuries to sperm whales between 2001 and 2005 (Waring et al. 2007). Given that sperm whales are unlikely to occur in areas (based on water depth) where the SHS would operate, and given that the operation of the Sector

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 marine turtles and large whales could be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery, and therefore the SHS, would not have any adverse effects on the availability of prey for these species. Sea turtles feed on a variety of plants and animals, depending on the species; however, none of the turtle species are known to feed upon groundfish. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The multispecies fishery will not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that will pass through multispecies fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish (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 will not, nor would the approval of the SHS Operations Plan, affect the availability of prey for foraging humpback or fin whales.

4.4.4 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 and serious injury 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 4.4.4-1 identifies the classifications used in the List of Fisheries (LOF) for FY 2010 (74 FR 58859, November 16, 2009), which are broken down into Tier 2 Categories I, II, and III.

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve inadvertent interactions with fishing gear when the gear is deployed in areas used by protected resources. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. Spatial and trophic interactions can occur with various types of fishing gear used by the multispecies fishery through the year. 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 Sector activities that occur during these seasons. Although harbor seals may be more likely to occur in the operations area between fall and spring, harbor and gray seals are year-round residents; therefore, interactions could occur year-round. The uncommon occurrences of hooded and harp seals in the operations area are more likely to occur during the winter and spring, allowing for an increased potential for interactions during these seasons.

TABLE 4.4.4-1 Descriptions of the Tier 2 Fishery Classification Categories (50 CFR 229.2)	
Category	**Category Description**
Category I	A commercial fishery that has frequent incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is, by itself, responsible for the annual removal of 50 percent or more of any stock's potential biological removal (PBR) level.
Category II	A commercial fishery that has occasional incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 percent and 50 percent, exclusive of any stock's PBR.
Category III	A commercial fishery that has a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. This classification indicates that a commercial fishery is one that collectively with other fisheries is responsible for the annual removal of: a. Less than 50 percent of any marine mammal stock's PBR level, or b. More than 1 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator would determine whether the incidental serious injury or mortality is "remote" by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator.

Although interactions between protected species and gear deployed by the Northeast multispecies fishery 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, traps/pots, and longlines). The potential for entanglements to occur is assumed to be higher in areas where more gear is set and in areas with higher concentrations of protected species.

Table 4.4.4-2 lists the marine mammals known to have had interactions with gear used by the Northeast multispecies fishery including sink gillnets, traps/pots, bottom trawls, and bottom longlines within the Northeast multispecies region, as excerpted from the LOF for FY 2010 (NMFS 2009b [74 FR 58859, November 16, 2009], also see Waring et al. 2009). 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 4.4.4-2
Marine Mammal Species and Stocks Incidentally Killed or Injured Based on Northeast Multispecies Fishing Areas and Gear Types (based on 2010 List of Fisheries)

Fishery		Estimated Number of Vessels/Persons	Marine Mammal Species and Stocks Incidentally Killed or Injured
Category	**Type**		
Category I	Mid-Atlantic gillnet	>670	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
	Northeast sink gillnet	341	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

TABLE 4.4.4-2 (continued)
Marine Mammal Species and Stocks Incidentally Killed or Injured Based on Northeast Multispecies Fishing Areas and Gear Types (based on 2010 List of Fisheries)

Fishery		Estimated Number of Vessels/Persons	Marine Mammal Species and Stocks Incidentally Killed or Injured
Category	**Type**		
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
	Northeast bottom trawl	1,052	Common dolphin, WNA
			Gray seal, WNA[b]
			Harbor porpoise, GOM/BOF
			Harbor seal, WNA
			Harp seal, WNA
			Long-finned pilot whale, WNA
			Short-finned pilot whale, WNA
			White-sided dolphin, WNA [a]
	Atlantic mixed species trap/pot [c]	unknown	Fin whale, WNA [d]
			Humpback whale, GOM
Category III	Northeast/Mid-Atlantic bottom longline/hook-and-line	46	None documented in recent years

Notes:

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

[b] Although not included in the 2010 List of Fisheries, Waring et al. (2009) indicates that nine gray seal mortalities in 2007 were attributed to incidental capture in the northeast bottom trawl.

[c] This fishery is classified by analogy.

[d] The fin whale noted as being killed or injured in the Atlantic mixed species trap/pot fishery was later determined to have been impacted by hagfish pot gear and is proposed for removal.

Marine mammals are taken in gillnets, trawls, and trap/pot gear used in the Northeast multispecies area. Of these gear types, gillnets are considered more detrimental to marine mammals such as pilot whales, dolphins, porpoises, and seals, as well as large marine whales. To minimize potential impacts to certain cetaceans, multispecies fishing vessels would be required to adhere to measures in the ALWTRP, which was developed to address entanglement risk to right, humpback, and fin whales, and to acknowledge benefits to minke whales in specific Category I or II commercial fishing efforts that utilize traps/pots and gillnets. The ALWTRP calls for the use of gear markings, area restrictions, and use of weak links, and sinking groundline. Fishing vessels would be required to comply with the ALWTRP in all areas where gillnets were used. The Bottlenose Dolphin Take Reduction Plan (BDTRP) and HPTRP would also be complied with within the Northeast multispecies area. The BDTRP would be complied with in the Mid-Atlantic gillnet region and restricts night-time use of gillnets. The HPTRP would be complied with in the Gulf of Maine to reduce interactions between the harbor porpoise and gillnets in

New England. The HPTRP implements seasonal area closures and the seasonal use of pingers (acoustic devices that emit a sound) to deter harbor porpoises from approaching the nets.

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

4.5 HUMAN COMMUNITIES/SOCIAL-ECONOMIC ENVIRONMENT

This EA considers the formation of the SHS and evaluates the effect the Sector 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 SHS 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 SHS participants as well as their homeports.

4.5.1 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. Today, 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 wolffish) harvested from three geographic areas (Gulf of Maine, Georges Bank, and southern New England/Mid-Atlantic Bight) representing 19 distinct stocks. Fourteen of these stocks are considered allocated target stocks as described in Section 4.2.1, and are addressed in this EA.

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. 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, landings 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 by the Magnuson-Stevens Act 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 (domestic plus foreign) continued to trend downward from about 200,000 tons to about 100,000 tons through the mid 1980's (NOAA 2007).

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, landings decreased throughout the latter part of the 1980's 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 Northeast Multispecies FMP allowed for self-selected groups of limited access groundfish permit holders to form sectors. These sectors were allowed to develop a legally binding Operations Plan and operate under an ACE. While approved sectors were subject to general requirements specified in Amendment 16 in exchange for operating under an ACE, sector members were exempt from DAS and some of the other effort control measures that tended to limit the flexibility of fishermen. 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.

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 were 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 middle Atlantic. 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 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 fishing represents an important occupation in many of the smaller port areas.

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.

4.5.2 Overview of the Sustainable Harvest Sector

The SHS is a group of 50 limited access Northeast multispecies (groundfish) permit holders who would voluntarily work together as a Sector under the terms described in the Amendment 16 to the Northeast Multispecies FMP. Collectively, the SHS holds 129 Northeast multispecies permits which were fished by 50 vessels. Active SHS vessels fish in all areas of the Northeast region, though fish primarily in the EEZ of the Gulf of Maine and Georges Bank when pursuing groundfish. If approved, FY 2010 would be the first year the SHS would operate.

Approximately 90 percent of SHS vessels are bottom trawlers. The remaining 10 percent are gillnetters, some of which may switch to demersal longline gear to take advantage of the Closed Area I Hook Gear Haddock SAP. SHS fishermen would be expected to land their catch primarily in Point Judith and Newport, Rhode Island; Boston, Chatham, Gloucester, Hyannis, New Bedford, Provincetown, and Scituate, Massachusetts; Portsmouth and Rye, New Hampshire; and Kennebunkport (Biddeford Pool), Cundy's Harbor, Phippsburg (Sebasco Harbor), Portland Harbor, and Rockland, Maine. Secondary ports may include Woods Hole, Massachusetts; Bar Harbor and Southwest Harbor, Maine; and Montauk, New York. A description of each of the primary ports is provided below (in alphabetic order) largely based on information provided in 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).

4.5.2.1 Boston, Massachusetts

The City of Boston (42.35º N, 71.06º 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.

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 1900's, 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.

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 4.5.2-1). 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 who docked in Boston Harbor live elsewhere (Table 4.5.2-2). 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 there.

TABLE 4.5.2-1
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 4.5.2-2 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

4.5.2.2 Chatham, Massachusetts

Chatham, Massachusetts is located at the southeastern tip of Cape Cod in Barnstable County, approximately 89 miles from Boston. To the east is the Atlantic Ocean, to the south is Nantucket Sound, and to the north is Pleasant Bay. The only adjacent town (located at both the north and west town line boundaries) is Harwich. Major geographical features of the town are hills, wooded uplands, extensive barrier beaches and spits, harbors, numerous small estuaries, and salt and freshwater ponds (Town of Chatham No Date).

History

Chatham was an English settlement in the mid 1600's. The population began to stabilize with the fishing trade, ship building, fishing, and salt making in the mid 18th century. With the building of the railroad in 1887, Chatham quickly became a summer resort destination for wealthy people. By 1950, the summer season population was more than double the year-round population. Chatham now receives up to 25,000 visitors each summer (Town of Chatham No Date). Although the cost of living is increasing in Chatham from the dominant tourism industry, there is still a fishing community using a range of harvest techniques from the more traditional hook and line and weir fishing to the more modern trawling, gillnetting, scalloping, etc., as well as other important shellfisheries. While the fishing industry exists and is determined to survive through the difficult period of stock depletion and strict fishery regulations, many changes both in and out of the town are putting pressure on the industry.

Commercial Fishing

Federal landed value data reveals that large-mesh groundfish were the highest value catch between the years 1997 and 2006. There are a variety of landed groups in Chatham, with large-mesh groundfish, "Other," and lobster yielding the highest values (Table 4.5.2-3). The number of vessels whose homeport was Chatham stayed relatively consistent over the 1997-2006 period, with a small spike in 2002 and a significant decline in 2006. Likewise, the level of fishing homeport value stayed consistent

during the same time. The number of vessels whose owner's city was Chatham fluctuated between 61 and 94 vessels, showing the same decline in 2006 (Table 4.5.2-4).

TABLE 4.5.2-3
Dollar Value of Federally Managed Groups Landed in Chatham

Federal Group	Rank Value of Average Landings from 1997-2006[d]
Large-mesh Groundfish[a]	1
Other[b]	2
Lobster	3
Scallop	4
Monkfish	5
Dogfish	6
Skate	7
Squid, Mackerel, Butterfish	8
Summer Flounder, Scup, Black Sea Bass	9
Bluefish	10
Small-mesh Groundfish[c]	11
Surf Clams, Ocean Quahog	12
Tilefish	13
Herring	14

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 4.5.2-4 Commercial Fishing Trends in Chatham		
Year	Number of vessels with Chatham homeport	Number of vessels whose owner receives mail in Chatham
1997	146	87
1998	131	75
1999	130	77
2000	131	79
2001	135	81
2002	162	94
2003	161	94
2004	145	82
2005	136	72
2006	117	61

4.5.2.3 Cundy's Harbor, Maine

The Village of Cundy's Harbor (44.40º N, 69.89º 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).

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 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 there during the 1800's, 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 there but work in Portland Harbor, Bath, or Brunswick; retirees who have moved to Harpswell; and "working townsfolk," many of whom earn their income from fishing (Hall-Arber et al. 2001).

Commercial Fishing

There are multiple commercial wharves 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 4.5.2-5). Landings in the "Other" species grouping were also significant. 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 4.5.2-6). The level of homeport fishing for Cundy's Harbor was consistently lower than the level of landings there 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 4.5.2-5
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 4.5.2-6 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
7Dogfish	$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.

4.5.2.4 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).

History

The history of Gloucester has revolved around the fishing and seafood industries since its settlement in 1623. By the mid 1800's, 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. Enactment of the Magnuson-Stevens Act prevented foreign vessels from fishing within the EEZ, and Gloucester's fishing fleet soon increased along with other communities -- 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).

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 United States (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 4.5.2-7). 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 4.5.2-8).

TABLE 4.5.2-7
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 4.5.2-8 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.

4.5.2.5 Hyannis, Massachusetts

The village of Hyannis is part of the Town of Barnstable, Massachusetts (41.70º N, 70.30º W), which is located on Cape Cod, in Barnstable County. Barnstable straddles the width of the Cape, and is situated along Cape Cod Bay to the north and Nantucket Sound to the south, bordering Yarmouth and Dennis to the east and Sandwich and Mashpee to the west (USGS 2008). This town encompasses a total of 76.3 square miles, of which 60.0 square miles are land and the rest is water (State of Massachusetts 2007).

History

In 1639, settlers that arrived from elsewhere in Plymouth Colony named the community after Barnstable, England. Originally a farming community, fishing and shore whaling soon became important industries (Hyannis Chamber of Commerce No Date); thus beginning Barnstable's long history with harvesting resources from the sea. Cotuit Oyster Company has been harvesting and selling oysters in Cotuit since 1837 (Maroney 2004). Relics of Barnstable's history as an important fishing port still remain on Freezer Point on Barnstable's harbor, in the form of the old Cannery, built in 1943, where thousands of pounds of fish were canned and shipped around the country, and the old fish house next door (Szmit 2005). Today, the town of Barnstable includes seven villages: Barnstable, Centerville, Cotuit, Hyannis, Marstons Mills, Osterville, and West Barnstable. The village of Barnstable is the center of the Barnstable County government, and Hyannis is the commercial and town government center of Barnstable.

Commercial Fishing

Available landings and vessel data combine Barnstable, Hyannisport, and Cotuit, as all three are commercial ports within the town of Barnstable. On average, lobster was the most valuable species landed in Barnstable from 1997 to 2006, with average landings of $1.3 million (Table 4.5.2-9). Lobster landings in 2006 were worth considerably more than this, at over $1.8 million. After lobster, landings in the "Other" species grouping (which likely includes crab and shellfish) and in scallops were also valuable; landings of both were far greater in 2006 than the 10-year average values. In general, lobsters are landed in Hyannisport, while "Other" species, primarily shellfish, are landed in Barnstable Harbor, which has an important shellfishery. Overall, the value of landings in Barnstable was very low for 1997 to 1999, but then did not fall below $1.5 million, with a high of just under $5 million in 2005 (Table 4.5.2-10). The value of fishing for homeported vessels was high in every year, with a low of $2.5 million in 2004 and a high of $5.6 million in 2005, with no discernible pattern. The number of homeported vessels increased from 1999 to 2002, with 53 in 2002, and then dropped down to 30 in 2006. The number of vessels with owners living in Barnstable had a similar trend, increasing to a high of 52 in 2002, and falling to 32 in 2006. The similarity of these two numbers indicates that most vessel owners living in Barnstable also keep their vessels there.

TABLE 4.5.2-9
Dollar Value of Federally Managed Groups Landed in Barnstable

Federal Group	Average from 1997-2006[c]	2006 only[c]
Lobster	$1,297,677	$1,827,462
Other[a]	$413,316	$1,717,062
Scallop	$187,238	$1,052,019
Summer Flounder, Scup, Black Sea Bass	$110,690	$260,226
Surf Clams, Ocean Quahog	$76,817	$63,859
Large-mesh Groundfish[b]	$5,307	$14,403
Bluefish	$2,693	$9,534
Monkfish	$2,156	$5,169
Squid, Mackerel, Butterfish	$1,057	$1,292
Skate	$107	$890
Dogfish	$15	$150
Lobster	$1,297,677	$1,827,462

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] All values are reported in nominal U.S. dollars.

TABLE 4.5.2-10
Commercial Fishing Trends in Barnstable

Year	Number of vessels with Barnstable home-port	Number of vessels whose owner receives mail in Barnstable	Value of landings among vessels home-ported in Barnstable[a]	Value of fisheries landed in Barnstable[a]
1997	51	43	$3,051,808	$101,199
1998	41	36	$2,869,649	$48,110
1999	37	35	$3,007,525	$80,121
2000	39	41	$2,846,808	$2,501,746
2001	48	46	$3,379,368	$2,927,422
2002	53	52	$4,065,432	$1,892,440
2003	42	39	$3,352,301	$1,921,826
2004	40	39	$2,564,272	$1,575,896
2005	34	35	$5,610,276	$4,969,897
2006	30	32	$5,020,077	$4,952,066

Note:
[a] All values are reported in nominal U.S. dollars.

4.5.2.6 Kennebunkport (Biddeford Pool), Maine

Kennebunkport (43.34° N, 70.34° W) is located in York County, on the southern Maine Coast. It is located at the mouth of the Kennebunk River (Town of Kennebunkport 2008), and consists of a total area of 3.2 square miles (3.1 square miles of land; and 0.1 square mile of water (State of Maine 2004b). Biddeford Pool is within 3 miles of Kennebunkport.

History

Kennebunkport, part of the Kennebunks, began with a settlement at Cape Porpoise (Cape Porpus) in 1610. In 1653, Kennebunk was established under the control of the Massachusetts Bay Colony, but was a target of Native hostility. In 1719, the area of present-day Kennebunkport was re-colonized and named Arundel (Kennebunkport Historical Society 2006). Throughout the 17th and 18th centuries, the location was defined by its offshore fishing waters, lumber resources, shipbuilding, and as an entry port for foreign trade (Nonantum Resort 2006). In 1821, the town was established under its current name of Kennebunkport (Kennebunkport Historical Society 2006).

The shipbuilding era of the Kennebunks reached its peak in the 19th century. As shipbuilding declined towards the latter part of the century, the presently thriving tourism industry emerged.

Commercial Fishing

The most valuable landings in Kennebunkport in 2006 were lobster, followed by species in the "Other" category (Table 4.5.2-11). Overall, the values of landings in 2006 were lower than the 10-year averages for those species. The total landings in Kennebunkport have declined in recent years from a high of over $3.6 million in 1999 down to less than a million in 2005. The level of homeport fishing has

remained relatively steady over this same period of time, with some variability but no clear trend. At the same time, the number of vessels listing Kennebunkport as their homeport declined. Likewise, the number of vessels with owners living in Kennebunkport declined. The data show that in most years, most vessels landing in Kennebunkport do not list it as their homeport, and there are more vessels with owners living there than there are vessels homeported there (Table 4.5.2-12).

TABLE 4.5.2-11
Dollar Value of Federally Managed Groups Landed in Kennebunkport

Federal Group	Average from 1997-2006[c]	2006 only[c]
Lobster	$1,863,259	$1,634,288
Other[a]	$221,626	$35,049
Large-mesh Groundfish[b]	$26,071	$8,033
Scallop	$3,086	$0
Monkfish	$2,714	$558
Squid, Mackerel, Butterfish	$5	$0
Bluefish	$1	$0
Skate	$1	$0

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] All values are reported in nominal U.S. dollars.

TABLE 4.5.2-12
Commercial Fishing Trends in Kennebunkport

Year	Number of vessels with Kennebunkport homeport	Number of vessels whose owner receives mail in Kennebunkport	Value of landings among vessels homeported in Kennebunkport[a]	Value of fisheries landed in Kennebunkport[a]
1997	28	37	$180,937	$2,730,250
1998	19	31	$149,629	$2,057,789
1999	22	32	$134,768	$3,669,728
2000	21	29	$130,919	$2,846,675
2001	24	29	$100,793	$2,121,483
2002	23	30	$86,685	$2,077,278
2003	21	29	$177,670	$1,814,800
2004	17	22	$151,385	$1,536,532
2005	18	20	$166,185	$635,167
2006	16	24	$194,325	$1,677,928

Note:

[a] All values are reported in nominal U.S. dollars.

4.5.2.7 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).

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 1920's.

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 United States for landed value. One factor complicating further development of the New Bedford harbor area is its listing by U.S. Environmental Protection Agency as a superfund site due to the presence of metals, organic compounds, and PCBs.

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 primarily driven by increased landings of scallop (Table 4.5.2-13). However, over that same time the value of groundfish landings decreased approximately 20 percent (Table 4.5.2-14).

TABLE 4.5.2-13
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 4.5.2-14 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.

4.5.2.8 Newport, Rhode Island

Newport, Rhode Island (41.50°N, 71.30°W) (USGS 2008) is located at the southern end of Aquidneck Island in Newport County. The city is located 11.3 miles from Narragansett Pier, 59.7 miles from Boston, Massachusetts, and 187 miles from New York City.

History

In the mid 1700's, Newport was one of the five largest ports in colonial North America and, until Point Judith's docking facilities were developed, it was the center for fishing and shipping in Rhode Island. 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 1930's when the fishery collapsed, and the fishing industry shifted to groundfish trawling.

Commercial Fishing

Newport has a highly diverse fishery. Of the federal landed species, scallop had the highest value in 2006, at over $13 million. The average value of scallop landings for 1997 to 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 on average, 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 (see Table 4.5.2-15). The value of landings for homeported vessels in Newport was relatively consistent from 1997 to 2006, with a high of just under $8 million in 2003 (see Table 4.5.2-16). The level of landings in Newport was steady from 1997 to 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, while the number of vessels with owners living in Newport increased from 13 in 1997 to 18 in 2006; this implies that most vessels homeported in Newport have owners residing in other communities.

TABLE 4.5.2-15
Dollar Value of Federally Managed Groups Landed in Newport

Federal Group	Average from 1997-2006[d]	2006 only[d]
Lobster	$2,758,908	$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

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 4.5.2-16
Commercial Fishing Trends in Newport

Year	Number of vessels with Provincetown homeport	Number of vessels whose owner receives mail in Provincetown	Value of landings among vessels home-ported 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.

4.5.2.9 Phippsburg (Sebasco Harbor), Maine

Sebasco (43.78º N and 69.85º W) is a small village within the town of Phippsburg which is a subdivision of Sagahadoc County. Sebasco was formerly known as "Sebasco Estates," after the Sebasco Harbor Resort. The town of Phippsburg also includes the villages of Phippsburg, Parker Head, Popham, West Point, Sebasco, Winnegance, the Center, Small Point, Meadowbrook and Ashdale.

History

At Small Point Harbor, on the south-west side of the town, is the site of a fishing settlement established in 1716. A fort was erected in the settlement to protect the settlers. A sloop named "Pejepscot" transported lumber and fish to Boston and returned with merchandise and settlers from there (Varney 1886b). The settlement was destroyed during Lovewell's War (1722-1725) (State of New Hampshire 2007). In 1734 Colonel Arthur Noble built a strong garrison on the north side of the peninsula near Fiddler's Reach and by 1737 re-settlement of the area began. Phippsburg was then an annex of Georgetown, but on January 25, 1814 Phippsburg was separated from Georgetown and incorporated under the name "Phipsburgh," which was later changed to "Phippsburg" (Varney 1886b).

From the time of the original settlement to present day, fishing has been a mainstay of Phippsburg's and is vital to the economy of the community today (Town of Phippsburg 2006). Historically ice harvesting and wooden ship building were also important industries, although their importance has greatly diminished (Sebasco Harbor Resort 2008). Because of its location on a peninsula and proximity to large cities such as Boston, tourism has played, and continues to play, a major role in Phippsburg's economy. For decades, the area has been home to a number of large hotels catering to summer vacationers from the larger northeastern cities (Town of Phippsburg 2006).

Commercial Fishing

Landings data are combined for Phippsburg and Sebasco Estates, and vessel data includes data from Phippsburg, Sebasco, and Sebasco Estates. The area where many landings occur is still referred to as "Sebasco Estates." Many of these landings and vessels are likely interchangeable among these three community names.

Lobster was the most important species landed for 1997 to 2006 in Sebasco Estates and Phippsburg (Table 4.5.2-17). There were more vessels homeported in Sebasco Estates than Phippsburg or Sebasco in all years; generally the combined number of homeported vessels declined from 1997 to 2006 (Table 4.5.2-18). The number of vessels with owners living in Phippsburg, Sebasco, or Sebasco Estates increased to 52 in 2003, and dropping to 45 in 2006. The number of vessel owners living in Sebasco, Sebasco Estates, or Phippsburg far exceeded the number of homeported vessels, meaning many vessel owners keep their vessels in another port.

TABLE 4.5.2-17
Dollar Value of Federally Managed Groups Landed in Sebasco Estates/Phippsburg

Federal Group	Rank Value of Average Landings from 1997-2006[d]
Lobster	1
Other[a]	2
Large-mesh Groundfish[b]	3
Monkfish	4
Skate	5
Squid, Mackerel, Butterfish	6
Small-mesh Groundfish[c]	7
Herring	8
Dogfish	9

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] 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 4.5.2-18 Commercial Fishing Trends in Sebasco Estates/Phippsburg		
Year	Number of vessels with Sebasco Estates/Phippsburg home-port	Number of vessels whose owner receives mail in Sebasco Estates/Phippsburg
1997	35	47
1998	30	48
1999	30	50
2000	26	50
2001	24	49
2002	23	50
2003	24	52
2004	26	54
2005	20	49
2006	21	45

4.5.2.10 Point Judith/Narragansett

Narragansett (41.45°N, 71.45°W) (USGS 2008) is located in Washington County, 30 miles south of Providence. Point Judith is located in the southern end of Narragansett along Highway 108 near Galilee State Beach, at the western side of the mouth of Rhode Island Sound. Point Judith itself is not a census designated place or incorporated town, and as such has no census data associated with it. Thus, this profile provides census data from Narragansett Town (town-wide) and other data from both Point Judith itself and Narragansett.

History

The land now called Narragansett was originally inhabited by the Narragansett Indians until Roland Robinson purchased it in 1675. By the 1660's, settlers put the fertile soil to use by developing agriculture in the area. Soon the area's economy depended on the export of agricultural products to markets such as Boston, Providence, and Newport. By the 1700's, there was a thriving ship building industry and a busy port. Fishing did not come into prominence again until the 1930's (Griffith and Dyer 1996).

By the 1800's, many farmers began to supplement their income by fishing for bass and alewife, or harvesting oysters. By the early 1900's, Point Judith's Port of Galilee became one of the largest fishing ports on the east coast. By the 1930's, wharves were constructed to facilitate large ocean-going fishing vessels (Eckilson 2007). Today, Point Judith is not only an active commercial fishing port, but it supports a thriving tourism industry that includes restaurants, shops, whale watching, recreational fishing, and a ferry to Block Island.

Commercial Fishing

Over the 10-year period from 1997 to 2006, the value of landings in Point Judith varied but indicated a declining trend, from a high of just over $51 million to a low of $31 million in 2002 to 2003.

However, in 2004 the landings value began to increase again, back to just under $47 million in 2006. The landings value for the squid, mackerel, and butterfish species grouping was higher in 2006 than the average value for 1997 to 2006 (see Table 4.5.2-19). The value of lobster in 2006, second most valuable in terms of landings, was lower in 2006 than the average value. Vessel data is combined there for Point Judith and Narragansett; there are no vessel owners listed for Point Judith (because the name refers only to the port), indicating that many fishermen live in the Narragansett area and fish out of Point Judith (Table 4.5.2-20). In total, the number of vessels homeported in either Point Judith or Narragansett reached a high of 186 in 2001, and a low of 168 in 2006. The number of vessels with owners living in Narragansett was much lower in all years than the number of vessels homeported there, indicating that many of the vessels in Point Judith have owners residing in other communities.

TABLE 4.5.2-19
Dollar Value of Federally Managed Groups Landed in Point Judith/Narragansett

Federal Group	Average from 1997-2006[d]	2006 only[d]
Squid, Mackerel, Butterfish	$11,298,781	$13,188,211
Lobster	$11,022,301	$8,675,086
Summer Flounder, Scup, Black Sea Bass	$4,718,136	$6,495,568
Small-mesh Groundfish[a]	$2,816,677	$1,799,479
Monkfish	$2,687,563	$2,110,227
Large-mesh Groundfish[b]	$2,451,647	$3,383,452
Other[c]	$2,056,576	$2,697,425
Scallop	$1,457,702	$7,420,396
Skate	$618,033	$604,990
Herring	$470,065	$376,506
Tilefish	$230,142	$32,985
Bluefish	$112,378	$118,466
Dogfish	$48,031	$45,000
Red Crab	$9,593	$0

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 4.5.2-20
Commercial Fishing Trends in Point Judith/Narragansett

Year	Number of vessels with Point Judith/Narragansett homeport	Number of vessels whose owner receives mail in Point Judith/Narragansett	Value of landings among vessels home-ported in Point Judith/Narragansett[a]	Value of fisheries landed in Point Judith/Narragansett[a]
1997	181	61	$33,021,800	$47,529,746
1998	175	55	$32,870,223	$42,614,251
1999	181	60	$36,324,182	$51,144,479
2000	184	61	$33,911,658	$41,399,853
2001	186	62	$30,121,535	$33,550,542
2002	179	53	$30,014,709	$31,341,472
2003	173	52	$32,793,425	$31,171,867
2004	174	51	$37,058,022	$36,016,307
2005	171	52	$37,150,241	$38,259,922
2006	168	51	$41,021,147	$46,947,791

Note:
[a] All values are reported in nominal U.S. dollars.

4.5.2.11 Portland Harbor, Maine

The city of Portland, Maine (43.66 N, 70.2 W) has 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. Portland is the largest city in Maine and has the highest population in New England north of Boston.

History

Portland was destroyed four times by various sources including Native American attacks, the British Navy during the American Revolution, and a fire. Each time it was rebuilt and now it is well-known for its preservation of Victorian-style architecture.

The city's port industries have driven its economy since its settlement. From the mid-1800's 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 and functions as the second largest oil port on the east coast of the United States.

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 4.5.2-21). Monkfish and herring are also important species. There were also a variety of species landed in Portland between

the years 1997 to 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 million in the previous year to over $13 million. The level of landings experienced a similar trend, with a dip from 2005 to 2006 of over $6 million (Table 4.5.2-22).

TABLE 4.5.2-21
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] 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 multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

[d] All values are reported in nominal U.S. dollars.

TABLE 4.5.2-22
Commercial Fishing Trends in Portland Harbor

Year	Number of vessels with Portland Harbor home-port	Number of vessels whose owner receives mail in Portland	Value of landings among vessels home-ported in Portland Harbor[a]	Value of fisheries landed in Portland Harbor[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.

4.5.2.12 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 2006). Portsmouth is located along the State's seaboard that only totals about 18 miles.

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 1600's. By 1725, Portsmouth was a thriving commercial port, exporting timber products and importing a wide range of goods (Wallace 2006). However, the 1800's 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).

Commercial Fishing

Large-mesh groundfish and monkfish were the most valuable landings in Portsmouth between the years 1997 and 2006 (Table 4.5.2-23). 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; however, lobster landings had increased considerably, 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 4.5.2-24).

TABLE 4.5.2-23
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 4.5.2-24 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

4.5.2.13 Provincetown, Massachusetts

Provincetown is located on the northern tip of the Cape Code peninsula in Barnstable County in the State of Massachusetts. It is bordered by Truro on the east and surrounded by the Atlantic Ocean on all other sides (USGS 2008).

History

Provincetown Harbor is the site of the first landing of the Mayflower and the signing of the Mayflower Compact. The first permanent settlement was established in 1700 and by 1727, the town was incorporated. By the mid 1800's, Provincetown, with the largest and safest natural harbor on the New England coast, had become one of the busiest seaports in the country (Hall-Arber et al. 2001). During this time, there were many fishing and salt drying businesses in town.

When the fishing industry faltered and the Portland Gale of 1898 swept away half of the town's wharves, the resort population of the town provided jobs to take the place of those jobs lost in the fishing industry. Today, the preserved historic buildings combine with the lure of the sea to support a large tourist and summer home industry (State of Massachusetts 2007).

Commercial Fishing

The fishing industry in Provincetown is no longer the mainstay of the community's economy; however, it does provide a sense of culture and is making an effort to stay afloat during times of low catches and strict regulations. On average from 1997 to 2006, large-mesh groundfish were the most valuable species grouping landed in Provincetown, with just over $1 million in landings on average (Table 4.5.2-25). However, by 2006 the landings of groundfish had declined, while landings of both lobster and scallops had increased from the 10-year average values, each valued at over $1 million. The number of vessels homeported in Provincetown remained between 45 and 38 from 1997 to 2005. In 2006 the number of homeported vessels dropped to 27 (Table 4.5.2-26).

TABLE 4.5.2-25
Dollar Value of Federally Managed Groups Landed in Provincetown

Federal Group	Average from 1997-2006[d]	2006 only[d]
Large-mesh Groundfish[a]	$1,003,894	$696,612
Lobster	$894,127	$1,297,060
Scallop	$705,648	$1,115,703
Other[b]	$427,874	$424,756
Small-mesh Groundfish[c]	$415,437	$0
Skate	$97,400	$86,723
Monkfish	$88,245	$55,407
Dogfish	$47,462	$16,482
Summer Flounder, Scup, Black Sea Bass	$31,372	$49,367
Surf Clams, Ocean Quahog	$21,935	$0
Bluefish	$20,293	$7,289
Squid, Mackerel, Butterfish	$8,094	$0
Herring	$9	$0

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 multi-species: red hake, ocean pout, mixed hake, black whiting, silver hake (whiting).

[d] All values are reported in nominal U.S. dollars.

TABLE 4.5.2-26 Commercial Fishing Trends in Provincetown				
Year	Number of vessels with Provincetown homeport	Number of vessels whose owner receives mail in Provincetown	Value of landings among vessels home-ported in Provincetown[a]	Value of fisheries landed in Provincetown[a]
1997	45	30	$1,836,160	$2,323,550
1998	41	25	$2,082,836	$2,806,083
1999	45	28	$2,861,104	$3,509,414
2000	38	19	$2,294,882	$3,805,809
2001	40	18	$3,745,646	$5,648,390
2002	40	19	$2,766,302	$3,894,188
2003	45	22	$2,001,747	$3,555,308
2004	45	21	$1,941,001	$3,477,377
2005	39	15	$2,863,492	$4,848,370
2006	27	11	$1,871,187	$3,749,399

Note:
[a] All values are reported in nominal U.S. dollars.

4.5.2.14 Rockland, Maine

Rockland (44.1°N, 69.1°W) is located in Mid-Coast Maine on Penobscot Bay in Knox County, 82 miles from Portland and 189 miles to Boston. The nearest municipalities of note include Camden, Thomaston, Waldoboro, Belfast, and Searsport (MapQuest 2001).

History

Rockland's economic history includes shipbuilding, commercial fishing, lime kilns, and granite quarries, the last of which are what the city is named for. The fishing-related industry dates back to the 1750's; the areas first fish processing plant was built in the 1880's and the first wholesale lobster businesses appeared in the 1900's. From the 1970's through the 1990's, the city hosted groundfish, shrimp, herring, and sardine processing plants. The collapse of the area groundfish fishery in the 1980's significantly reduced fisheries-related activity in the area. Today, Rockland is primarily a tourist destination and fine arts center with a minor manufacturing industry.

Commercial Fishing

Rockland's commercial fishery is primarily based on the herring and lobster fisheries (Table 4.5.2-27); large-mesh groundfish landings ranking 4th in value. The number of homeported vessels decreased, from 42 in 1997 to 22 in 2006 (Table 4.5.2-28). Over that time, the number of vessels whose owner receives mail in Rockland has varied from 18 to 9.

TABLE 4.5.2-27 Dollar Value of Federally Managed Groups Landed in Rockland	
Federal Group	**Rank Value of Average Landings from 1997-2006[c]**
Lobster	1
Herring	2
Other[a]	3
Large-mesh Groundfish[b]	4
Scallop	5
Monkfish	6
Red crab	7
Skate	8
Squid, Mackerel, Butterfish	9

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] 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 4.5.2-28 Commercial Fishing Trends in Rockland		
Year	**Number of vessels with Rockland homeport**	**Number of vessels whose owner receives mail in Rockland**
1997	42	17
1998	32	16
1999	28	14
2000	29	14
2001	32	15
2002	30	13
2003	26	15
2004	32	18
2005	30	14
2006	22	9

4.5.2.15 Rye, New Hampshire

The town of Rye (43.01° N, 70.77° W) (USGS 2008) is located in the New Hampshire Seacoast region, on the Atlantic Ocean's coast in Rockingham County. Rye contains 12.6 square miles of land area and 0.5 square miles of inland water area (State of New Hampshire ELMIB 2007).

History

The town was established by David Thompson in 1623 at Odiorne's Point, and named for the borough of Rye, a town on the English Channel. It was part of Portsmouth and then later incorporated as a parish of New Castle in 1726. The town includes the villages of Cable Road, Fairhill Manor, Foyes Corner, Langs Corner, Rye, Rye Beach, Rye Harbor, Rye North Beach, Wallis Sands, and West Rye. It has 8 miles if Atlantic coastline, and is the only New Hampshire town with Atlantic islands, the four Isles of Shoals (State of New Hampshire EMLIB 2007).

The increasing reliance on a tourism industry in Rye, as in the rest of the Seacoast, has decreased the economy's reliance on a fishing industry. Rye is significant as a fishing port because of its proximity to fertile fishing grounds of the region (Hall-Arber et al. 2001). Whale watching trips often access Jeffrey's Ledge and Stellwagen Bank National Marine Sanctuary (Blue Ocean 2004; State of New Hampshire ELMIB 2007). Rye Harbor is one of the state's largest saltwater fishing locations (Stedman and Hanson No Date).

Commercial Fishing

The most valuable species landed in Rye averaged for 1997 to 2006 was large-mesh groundfish, followed by lobster and "Other" species (Table 4.5.2-29). In 2006, lobster was responsible for the most landed value after groundfish. Overall, the number of boats homeported in Rye has increased, from a low of 25 in 2000 to 39 in 2006 (Table 4.5.2-30). The value of homeport fishing also showed a net increase from 1997 to 2006. The level of homeport fishing was higher in all years than the level of landings, indicating that some fishermen from Rye land their catch elsewhere, perhaps in one of the other ports along the New Hampshire sea coast.

TABLE 4.5.2-29
Dollar Value of Federally Managed Groups Landed in Rye

Federal Group	Rank Value of Average Landings from 1997-2006[d]
Large-mesh Groundfish[a]	1
Monkfish	2
Other[b]	3
Lobster	4
Dogfish	5
Scallop	6
Small-mesh Groundfish[c]	7
Bluefish	8
Herring	9
Skate	10
Squid, Mackerel, Butterfish	11
Surf Clams, Ocean Quahog	12

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 4.5.2-30 Commercial Fishing Trends in Rye		
Year	Number of vessels with Portsmouth homeport	Number of vessels whose owner receives mail in Portsmouth
1997	32	29
1998	31	29
1999	29	28
2000	25	25
2001	30	28
2002	32	28
2003	32	28
2004	37	32
2005	37	30
2006	39	30

4.5.2.16 Scituate, Massachusetts

The Town of Scituate (42.20º N, 70.73º W) is located in the South Shore region of Massachusetts, in Plymouth County, 30 miles south of Boston. Scituate faces Cape Cod Bay and is bordered by Marshfield and Norwell to the south and Cohasset to the north. It encompasses 31.8 square miles, of which 17.2 square miles is land, and 14.6 square miles is water (State of Massachusetts 2006).

History

The first permanent European settlement in Scituate was in 1627 or 1628, when a group from Plymouth headed north looking for fertile lands to cultivate. The town was incorporated in 1636 (Town of Scituate 2006). Scituate was an important fishing port by the end of the 18th century because of its protected harbor, but mud flats and shallow water made the harbor difficult to enter, so the town built Scituate Light, completing construction in 1811 (D'Entremont 2006). Shipbuilding was also an important industry to residents of Scituate. Between 1645 and 1871, there were over 1,000 ships built in the North River, which separates Scituate from Marshfield (Marshfield Chamber of Commerce 2006). At the start of the 20th century, Scituate was still a small town with around 2,000 residents and its' commercial fishing fleet continues to add to the town's appeal and historical ties.

Commercial Fishing

Lobster was the most valuable species landed there in 2006, bringing in nearly $1.8 million (Table 4.5.2-31). The second most valuable species grouping in 2006 was large-mesh groundfish, followed by monkfish. The landing values for lobster in 2006 were much higher than the average landings values between 1997 and 2006; however, the landings for groundfish in 2006 had declined from the 10-year average. The total landings in Scituate had their highest point in 2000, at about $4.8 million, then declined somewhat in subsequent years. Overall, the number of vessels homeported in Scituate varied between 1997 and 2006, reaching a high of 81 in 2002, and declining to 63 by 2006. The value of fishing to homeported vessels in Scituate increased somewhat during this time period, to $3.4 million in 2006 (Table 4.5.2-32). Also of interest is that the number of vessels owned by Scituate residents declined

over the same period, indicating that perhaps the vessel owners are moving out of Scituate, or that the vessels are changing hands.

TABLE 4.5.2-31
Dollar Value of Federally Managed Groups Landed in Scituate

Federal Group	Average from 1997-2006[d]	2006 only[d]
Large-mesh Groundfish[a]	$1,423,269	$1,221,144
Lobster	$1,258,349	$1,773,974
Monkfish	$402,945	$188,020
Dogfish	$74,765	$17,572
Other[b]	$29,467	$34,964
Skate	$16,538	$23,924
Squid, Mackerel, Butterfish	$12,405	$668
Scallop	$9,034	$28,418
Bluefish	$4,775	$1,290
Summer Flounder, Scup, Black Sea Bass	$3,539	$1,452
Surf Clams, Ocean Quahog	$2,459	$0
Small-mesh Groundfish[c]	$1,926	$31
Tilefish	$144	$0

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 4.5.2-32 Commercial Fishing Trends in Scituate				
Year	Number of vessels with Scituate home-port	Number of vessels whose owner receives mail in Scituate	Value of landings among vessels home-ported in Scituate[a]	Value of fisheries landed in Scituate[a]
1997	79	55	$2,573,583	$1,371,648
1998	70	50	$2,727,569	$2,855,762
1999	78	59	$2,015,519	$2,092,982
2000	75	53	$2,934,249	$4,770,224
2001	79	50	$2,093,487	$3,484,206
2002	81	50	$2,258,030	$3,837,513
2003	74	49	$2,597,671	$4,219,873
2004	77	53	$2,798,574	$3,815,547
2005	68	48	$2,845,396	$2,763,997
2006	63	44	$3,460,992	$3,291,457

Note:

[a] All values are reported in nominal U.S. dollars.

5.0 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

Prior to the advent of sectors, input controls (gear restrictions, area closures, and trip limits) were imposed on fishermen, which affected the amount of fish that could be caught in a day. Those restrictions, along with binding limits on the total number of days each fisherman could fish (DAS), were used to control fishing mortality for each of the groundfish stocks. Under this system, Common Pool members were allocated a portion of the target allowable fishing mortality for each species by (1) establishing a specific number of DAS, and (2) regulating Common Pool fishermen so fishing occurs in a manner that controls catch per day.

The advent of sectors does not change that overall process. Common Pool members would still be assigned DAS based on a total allowable fishing mortality. However, sector members are allocated the remaining portion of the total allowable fishing mortality. But, rather than being assigned DAS, sectors are allotted an ACE in pounds for the majority of the groundfish stocks and allowed more flexibility as to when and how sector members fish for those stocks through an approved Operations Plan. A sector's ACE for each stock is determined by multiplying the sector's proportional share of a stock based upon catch history, by the established ACL for the stock. The catch history is based upon the permits held by a sector.

If sectors were being introduced into a fishery that focused on a single stock, the introduction would almost certainly result in a reduction in the total amount of gear fished per pound of fish harvested. This is because sector fishermen would have increased flexibility with respect to when and how fishing occurs relative to Common Pool members and sector fishermen would likely be motivated to fish in a manner that increases their expected daily catch rate. As a result, the total amount of gear

deployed over a year to target a fixed quantity of a single stock would be expected to decrease somewhat relative to the levels that would have existed under the Common Pool.

However, Northeast multispecies fishermen generally do not pursue a single stock. Instead, fishermen simultaneously target and/or catch several species, each of which has its own acceptable level of fishing mortality. As such, the introduction of sectors allows for the possibility that fishermen could be able to coordinate their fishing to ensure that the sector does not reach its ACE for a single stock well before it reaches its ACE for the other allocated stocks. This coordinated effort could result in (1) increased harvest levels for stocks that typically were not fully exploited to their allowable limit under Common Pool operations, (2) an increase or decrease in the total amount of gear fished by sector fishermen over the course of a year, and (3) changes to the way gear is fished in order to increase gear selectivity.

In summary, the increased flexibility granted to sectors through their approved Operations Plan should increase catch per unit of effort (CPUE), which would tend to decrease the number of days with gear in the water (gear days). However, the ability to target specific stocks could allow sectors to more fully exploit previously under-exploited stocks, which would tend to increase gear days. Because multispecies sectors are relatively recent to the Northeast groundfish fishery, there exists little Northeast specific data to quantitatively determine the net effect of multispecies sector participation on gear days. However, after reviewing theory and available information from Pacific fisheries management (Sanchirico et al. 2006), and discussing the issue with sector representatives and fishermen, it appears likely that the overall change in gear days would conservatively be a slight increase based on going from the DAS approach to the ACE approach of fisheries management.

Further evaluation of potential impacts to physical resources, allocated target species, non-allocated target species and bycatch, protected resources, and human communities is discussed further in Section 5.1. Cumulative impacts of the Proposed Action in combination with other past, present, and reasonably foreseeable actions are discussed in Section 5.2.

5.1 DIRECT AND INDIRECT IMPACTS OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVES

Amendments 13 and 16 to the Northeast Multispecies FMP, and associated framework adjustments and NEFMC decisions have defined the needs of sector management and associated universal exemptions that would be applicable to all approved sectors. The amendments and adjustments also identify the requirements for a sector's Operations Plan. The potential impacts of the universal exemptions and general requirements of sector operation (e.g., Operations Plan) are evaluated in the Amendment 16 Final EIS in accordance with NEPA requirements (NEFMC 2009a). A detailed discussion of potential impacts of requested Sector-specific exemptions is provided in Sections 5.1.1 through 5.1.5.

Universal Exemptions

Universal exemptions were approved for sectors by the NEFMC in June 2009 (NEFMC 2009a). These universal exemptions would be granted for all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in the Final EIS for Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). As such, these universal exemptions were considered as part of the overall impacts of proposed sectors for FY 2010.

Specific universal exemptions for all approved sectors upon adoption of Amendment 16 are identified in Table 5.1-1.

Operations Plan

Amendment 16 identified the requirements of any proposed sector Operations Plan including quota management, monitoring, administrative, and gear restriction measures. The various provisions of any sector Operations Plan must be reviewed and approved by NMFS prior to implementation. The primary requirements of any sector Operations Plan associated with potential environmental impacts include:

- Identification of ACE thresholds based on permit history of Sector participants; and
- ACE allocation and discard monitoring.

Additional information on the components of the Operations Plan prepared by the SHS is provided in Section 3.1. Amendment 16 also allows for proposed sectors to identify sector-specific exemptions that a sector wants to integrate into their Operations Plan to maximize harvest efficiency while minimizing potential environmental impacts. Requested Sector-specific exemptions are identified in Section 3.2 and the potential impacts are described in Sections 5.1.1 through 5.1.5.

Summary of Conclusions of the Proposed Action

Table 5.1-1 provides a summary of conclusions regarding direct and indirect impacts that would occur as a result of universal exemptions, general sector operations, and Sector-specific exemptions. General impacts of the requirements in Amendment 16, including universal exemptions and the general requirements of Operations Plan, would vary from positive to low negative relative the Common Pool. Impacts of Sector-specific exemptions would vary from low positive to low negative (see Table 5.1-1). Additional discussion on potential impacts to the physical habitat/EFH, allocated target species, non-allocated target species and bycatch, protected resources, and human communities is provided in Sections 5.1.1 through 5.1.5.

TABLE 5.1-1
Summary of Direct and Indirect Effects of the Sustainable Harvest Sector Relative to the Effects of the Common Pool

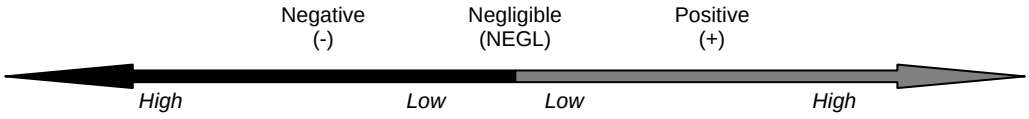
	Valued Ecosystem Components (VECs)					
	Physical Environment	Biological Environment			Human Communities	
Elements of Operation Plan	Physical Habitat (incl. EFH)	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
Amendment 16 - Universal Exemptions						
No DAS needed when groundfishing	L-	Negl	Negl	L-	+	+
No Trip Limits	L-	Likely L+	L+	Likely L-	+	+
Seasonal Closed Area on Georges Bank	Negl	Negl	Negl	L-	+	Likely +
Gulf of Maine Closures[11]	Negl	L-	Negl	Likely L-	Likely +	Likely +
6-inch Cod-end Exemption	Negl	Likely Negl, possibly L-	Negl	Negl	+	+
Amendment 16 - Operations Plan Requirements						
Quota Management	Negl	+	Negl	Negl	+	+
Monitoring	Negl	+	+	+	+	+
Administrative	Negl	Negl	Negl	Negl	Negl	+
Gear Restriction	Negl	Negl	Negl	Negl	Negl	Negl

[11] Amendment 16 (Section 4.2.3.9) would exempt sectors from all rolling closures except for: Blocks 124 and 125 in April; Blocks 132 and 133 in April-May; Block 138 in May; Blocks 139 and 140 in May-June; and Blocks 145, 146,147, and 152 in June.

TABLE 5.1-1 (continued)
Summary of Direct and Indirect Effects of the Sustainable Harvest Sector Relative to the Effects of the Common Pool

	Valued Ecosystem Components (VECs)					
	Physical Environment	Biological Environment			Human Communities	
Elements of Operation Plan	Physical Habitat (incl. EFH)	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
Sector-specific Exemptions						
20-day spawning block	Likely Negl	Negl	Negl	L-	L+	L+
120-day block for gillnets	Likely Negl	Negl	Negl	L-	L+	L+
Gillnet limit	Likely Negl	Negl	Negl	L-	L-	L+
DAS Leasing Restriction	Negl	Negl	Negl	Negl	L+	L+
Summary of Impacts	Negl	Negl	Negl	Likely L-	L+	L+

Key to TABLE 5.1-1			
Impact Definition			
	Direction		
VEC	**Positive (+)**	**Negative (-)**	**Negligible (Negl)**
Allocated target species, other landed species, and protected resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have little or no positive or negative impacts on stocks/populations
Habitat	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Human Communities	Actions that increase revenue and social well being of fishermen and/or associated businesses	Actions that decrease revenue and social well being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well being of fishermen and/or associated businesses
Impact Qualifiers:			
Low (L, as in low positive or low negative)	To a lesser degree		
High (H; as in high positive or high negative)	To a substantial degree		
Likely	Some degree of uncertainty associated with the impact		



5.1.1 Physical Environment/Habitat/EFH

5.1.1.1 Proposed Action

This section identifies impacts to the physical habitat, both positive and negative, associated with the Proposed Action. Impacts to the physical habitat/EFH associated with Amendment 16 universal exemptions, Operations Plan requirements, and each of the proposed Sector-specific exemptions are detailed below.

Amendment 16 – Universal Exemptions

Universal exemptions would be granted to all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). The effects of specific universal exemptions are summarized below.

No Days-At-Sea Needed when Groundfishing

The purpose of Northeast multispecies DAS accounting is to control groundfish mortality by limiting fishing effort to a set number of days per groundfish vessel. Since SHS members would be operating under an ACE, which clearly defines the amount of fish caught, it is no longer necessary to apply DAS to this group of fishermen to control groundfish mortality. It is expected that this universal exemption would allow vessels to successfully target select species. This would likely result in an increase in overall fishing time, as compared to the amount of time permitted under the DAS program, which would still apply to vessels in the Common Pool. Successful targeting of stocks with greater ACEs (e.g., GB haddock) would allow sector vessels to spend more time fishing for more abundant stocks whose catch was artificially constrained by DAS allocations designed to reduce effort on stocks that are overfished and/or experiencing overfishing (e.g., SNE/MA winter flounder). An overall reduction in the 2010 groundfish mortality under Amendment 16 would result in reduced habitat impacts fleetwide compared to previous years but because of an ACE controlling fishing efforts of sector members instead of DAS, sector members could have more bottom contact time and more impacts to the physical habitat compared to the Common Pool. Therefore, under the Proposed Action, it is expected that this exemption would result in a low negative impact to the physical habitat and EFH.

No Trip Limits

Trip limits are designed to limit the number of fish caught per trip. Trip limits on allocated target species may result in regulatory discards of fish that exceed relevant daily trip limits. An exemption from this restriction would result in increased landings and CPUE by SHS members, which would result in less bottom contact time compared to the Common Pool. Conversely, the ability to continue to catch and retain groundfish could increase gear days. As this could result in a slight increase in overall gear days, it is expected that this exemption would result in a low negative impact to the physical habitat and EFH since the primary gear type (trawl) would result in greater impact to the seafloor than fixed gear.

Seasonal Closed Area on Georges Bank in May

This universal exemption would allow fishing within an area that is otherwise closed to groundfishermen for the month of May. It is expected that this exemption would not increase overall bottom contact time since overall fishing effort would likely have occurred elsewhere if this exemption were not granted. Previously, many chose to begin their 20-day block out of the fishery at this time. Under this universal exemption, the time out of the fishery could shift away from May, but would still need to be taken (unless specifically exempted). In addition, there would be no access to Habitat Areas of Particular Concern (HAPC). Therefore, this exemption would result in a negligible impact on the physical habitat and EFH.

Gulf of Maine Rolling Closures

This universal exemption would allow fishing within areas that are otherwise closed to groundfishermen during specific time periods. Amendment 16 (Section 4.2.3.9) would exempt sectors from all rolling closures except for: Blocks 124 and 125 in April; Blocks 132 and 133 in April-May; Block 138 in May; Blocks 139 and 140 in May-June; and Blocks 145, 146,147, and 152 in June. These areas do not include any HAPC. It is expected that this exemption would not increase overall bottom contact time since overall fishing effort would likely occur elsewhere if this exemption were not granted. Previously, many fishermen would shift to other locations during these times. Since SHS members would be operating under an ACE, which clearly defines the amount of fish caught, the result would be that fish were caught in these locations and during times when they previously were not. Given that these areas

are fished during other times of the year, it is expected that this exemption would result in a negligible impact to physical habitat and EFH.

Six-inch Cod-end Exemption on Georges Bank if using Haddock Separator or Ruhle Trawl

This exemption would only apply to sector members fishing on Georges Bank using either a haddock separator trawl or a Ruhle trawl. Because these modified trawls do not contact the seafloor, it is expected that this exemption would not increase bottom contact time. Therefore, it is expected that there would be a negligible impact on physical habitat and EFH from this exemption.

Operations Plan under the Proposed Action

Each sector Operations Plan is unique. However, the harvest rules for all sector Operations Plans tend to fall into one of four broad categories: quota management, monitoring, administrative, and gear restriction. In addition, the harvest rules within each category tend to have similar impacts.

Section 3.1 provides a description of the harvest rules of the SHS Operations Plan and groups them within four categories. The summary category for each of these harvest rules and their likely impacts are provided in Table 5.1.1-1.

TABLE 5.1.1-1
Sustainable Harvest Sector Harvest Rules Summary for Physical Habitat

Summary Category	Harvest Rules Assigned to the Summary Category	Impacts
Quota Management	▪ Aggregate Allocation ▪ Full Retention of Legal Sized Fish ▪ Data Reconciliation ▪ Sector Call in ▪ Hot Spot Reporting ▪ Discard Rate	Harvest rules assigned to this category are largely administrative, and include actions that are taken to ensure a Sector's ACE is not exceeded. They are not expected to affect the number of gear days fished and would result in a negligible impact to physical habitat/EFH
Monitoring	▪ Dockside Monitoring	Harvest rules assigned to this category relate to the collection of data. These efforts would not be expected to affect the number of gear days fished and would result in a negligible impact to physical habitat/EFH.
Administrative	▪ Days at Sea (DAS) ▪ DAS Pooling	Harvest rules assigned to this category relate to strictly administrative issues (e.g. transmitting data). They are not expected to affect the number of gear days fished and would result in a negligible impact to physical habitat/EFH.
Gear Restriction	▪ Haul Gillnets Once Every 7 Days ▪ Seasonal or Area Gear Restrictions	These restrictions would have negligible impacts to physical habitat/EFH because they are intended to ensure universal exemptions do not result in new negative impacts.

Sustainable Harvest Sector-Requested Exemptions

In addition to the universal exemptions for all sectors under Amendment 16, the SHS has requested four exemptions to rules that apply to the Northeast multispecies fishery. Impacts to the physical environment from each exemption are individually assessed in this section.

1) Exemption from the 20-day spawning block out of the fishery required for all vessels

The 20-day block out rule was imposed as a means of controlling mortality by reducing fishing effort and to avoid disruption of spawning activity. Providing the SHS members access to spawning blocks with large numbers of spawning fish could reduce impacts to physical resources somewhat by increasing CPUE and thereby decreasing fishing time and bottom contact time for the fishing gear. Since SHS members would operate under an ACE, a minor increase in CPUE would result in fewer gear days and thereby less impacts to the physical habitat. The ability to target specific stocks may also result in an increase in gear days; however, as the potential to utilize an additional 20 days would not result in a large difference in the available amount of fishing time, it is expected this exemption would likely result in a negligible impact to physical habitat/EFH with implementation of the SHS Operations Plan relative to the Common Pool.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

The 120-day block out rule was imposed as a means of controlling mortality by reducing gillnetting effort. Exempting the SHS members from the 120-day block out could increase the CPUE and thereby decrease fishing time and bottom contact for the fishing gear. Since SHS members would operate under an ACE, a minor increase in CPUE would result in fewer gear days and thereby reduce impacts to the physical habitat. However, the ability to target specific stocks may result in an increase in gear days. Therefore, for the purposes of this EA it was conservatively assumed that this exemption would result in a minor increase in gear days as SHS would have the ability to fish during an additional 120 days during the year if ACE were not attained. Nevertheless, gillnets result in low impacts to the physical habitat and there would only be 5 gillnetters in the SHS. As a result, it is expected this exemption would likely result in a negligible impact to physical habitat/EFH with implementation of the SHS Operations Plan relative to the Common Pool.

3) Exemption from the limit on the number of gillnets imposed on the Day gillnet category, but not to exceed 150 nets per permit

The existing gillnet number restriction was implemented to reduce fishing effort and fishing mortality. It also had the effect of reducing the potential that gear would be left unattended to "hold" fishing ground. While SHS members would operate under an ACE, increasing the number of gillnets in use could result in an increase in gear days and thereby impacts to the physical habitat. However, the use of gillnets results in low degree impacts (NEFSC 2002), and there are only 5 gillnetters in this SHS. Therefore, this exemption would likely result in a negligible impact to the physical habitat/EFH with implementation of the SHS Operations Plan relative to the Common Pool.

4) Exemption from the length and horsepower restrictions on DAS leasing

The purpose of the length and horsepower restrictions on DAS leasing was to maintain the character of the fleet. This request is related to retention of monkfish harvested while vessels participate in the multispecies fishery. Among Common Pool participants, groundfish DAS allow a vessel to land and retain an increased quantity of monkfish under some circumstances. While groundfish fishermen operating as part of the SHS would be exempt from DAS regulation for allocated target species, they would still need to expend groundfish DAS to land and retain an increased quantity of monkfish under some circumstances. Implementation of this exemption would not be expected to increase the fishing

effort within the SHS. Thus, there would be a negligible impact to the physical habitat/EFH associated with this exemption relative to the Common Pool.

Summary of Direct and Indirect Impacts of the Proposed Action to Physical Habitat/EFH

Under the Proposed Action, the SHS would generally have a negligible to low negative impact on the physical environment and habitat (including EFH) relative to the vessels operating in the Common Pool (Table 5.1-1).

The effects of specific universal exemptions on the physical environment and habitat (including EFH) would generally be negligible. It is expected that universal exemptions to allow fishing in previously closed areas would not increase bottom contact time but would result in the transfer of effort from one area to another. In addition, it is expected that the exemption to allow the use of a 6-inch cod-end would not increase bottom contact time. Therefore, impacts to the physical habitat/EFH would be negligible.

The harvest rules for the SHS would also generally have a negligible impact on the physical habitat/EFH since the majority of the harvest rules are not expected to affect the number of gear days fished.

As discussed in Section 4.1.6, trawls have relatively high habitat impacts and bottom gillnets and longlines have low impacts (Morgan and Chuenpagdee 2003). The SHS would fish for target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines). Approximately 90 percent of SHS would use trawl gear and the remaining 10 percent would use gillnet and longline gear. Trawls result in a greater impact to the seafloor than fixed gear. However, the Common Pool would also utilize trawl gear and would primarily fish in the same areas as the SHS.

In addition, the Sector would be assigned an ACE for each of the Northeast multispecies stocks, which would require sectors to stop fishing once their ACE has been reached. It is expected that the use of the universal exemptions, harvest rules, and requested exemptions would result in an increase in CPUE that would result in less fishing days and thereby a reduction in impacts to the physical habitat/EFH. However, the ability to target specific stocks may result in an increase in gear days and therefore a slight increase in impacts to the physical habitat/EFH. For the purpose of this EA, it appears that the overall change in gear days would conservatively be a slight increase based on going from a DAS approach to the ACE approach of fisheries management. However, it is expected that any minor increase in gear days would not have a measurable effect on physical habitat/EFH.

5.1.1.2 No-Action Alternative

The No-Action Alternative is the disapproval of the Operations Plan. As part of this alternative, all SHS vessels would remain in the Common Pool under the regulations of Amendments 13 and 16, and framework adjustments to the Northeast Multispecies FMP. The SHS would not have an allocated ACE for Northeast multispecies stocks and would fish under FY 2010 Common Pool rules.

Allocations in the Common Pool are controlled by DAS that are based on historic (FY 1996 through FY 2001) maximum annual DAS allocation per permit (described in Amendment 13; FW 42). DAS allocations are input controls, setting an annual maximum on the effort that the Common Pool can expend. Under measures proposed by Amendment 16, Common Pool vessels are subject to a 50 percent reduction in DAS from their FW 42 allocation. Participating vessels in the Common Pool are regulated by an established daily trip limit. Vessels in the Common Pool are not constrained by individual

allocations and consequently have little incentive to stop fishing upon reaching their daily possession limit for some allocated target stocks if they are still catching other marketable allocated target stocks within possession limits.

Unlike the Proposed Action, the No-Action Alternative would not result in an increase in gear days. However, for the purposes of this EA it was conservatively assumed that Sector participation under the Proposed Action would result in a minor increase in gear days. Thus, if the No-Action Alternative were adopted, habitat impacts would be reduced to a minor degree relative to the level that would exist if the SHS were approved. However, it is expected that any minor changes in gear days would not have a measurable effect on physical habitat/EFH. If approved for FY 2010, more quantifiable information on actual fishing effort, specifically trawling effort, would be available to refine impacts to physical habitat associated with sectors relative to the Common Pool.

5.1.2 Allocated Target Stocks

This section addresses the likely impacts of the Proposed Action and No-Action Alternative on allocated target fish stocks managed under the Northeast Multispecies FMP.

5.1.2.1 Proposed Action

The SHS would operate under an ACE for 14 groundfish stocks (see Section 4.2). The SHS would consist of 44 active vessels. The SHS would fish for target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines). Fishing effort would be conducted primarily with trawls with some gillnets and longline gear.

In recent years, participants in the proposed SHS fished in the Common Pool and were managed under the Northeast Multispecies FMP. Common Pool management strategies control fishing effort (e.g. DAS)as a means to prevent overfishing. Table 5.1.2-1 displays select catch data resulting from implementation of the Northeast Multispecies FMP from FY 2005 to FY 2008. These data illustrate the variability in catch resulting from annual changes in fishing effort and stock management. For example, 3,193 mt of GB yellowtail were caught in 2005, as opposed to only 753 mt caught in 2007 by the entire fleet. Over the 4-year period, the catch varies for each species from slightly decreasing, stable, to slightly increasing.

TABLE 5.1.2-1
Commercial Landings (mt) for the Multispecies Large-mesh Fishery from Fishing Year 2005 to Fishing Year 2008

Species & Stock Area	FY 2005 Commercial Landings (metric tons)	FY 2006 Commercial Landings (metric tons)	FY 2007 Commercial Landings (metric tons)	FY 2008 Commercial Landings (metric tons)
GOM Cod	3,410	3,206	4,373	5,200
GB Cod	2,293	2,957	4,005	3,225
GOM Haddock	788	639	401	453
GB Haddock	5,210	2,218	3,947	6,057
Redfish	568	511	990	1,199
Pollock	6,339	6,480	8,908	9,596
White Hake	2,427	1,381	1,451	1,476

Cape Cod/GOM Yellowtail	686	420	521	476
GB Yellowtail	3,193	1,396	753	1,115
SNE/MA Yellowtail	141	144	200	198
GOM Winter Flounder	318	213	252	241
GB Winter Flounder	2,130	968	827	1,129
Witch Flounder	2,591	1,370	1,105	953
American Plaice	1,287	1,005	1,042	1,222
TOTAL	**31,381**	**22,908**	**28,775**	**32,540**

Source: Northeast Multispecies Preliminary Fisheries Statistics Reports (NOAA 2009b). Data may include both state and federal landings.

Amendment 16 - Universal Exemptions

Universal exemptions would be granted to all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). The effects of specific universal exemptions are summarized below.

No Days-At-Sea Needed when Groundfishing

The purpose of Northeast multispecies DAS accounting is to control groundfish mortality by limiting fishing effort to a set number of days per groundfish vessel. Since SHS members would be operating under an ACE that clearly defines the maximum amount of each groundfish stock that could be caught, it is no longer necessary to apply DAS to this group of fishermen to control groundfish mortality. It is expected that this universal exemption would allow vessels to target select species, and could result in an increase in overall fishing time, as compared to the amount of time permitted under the DAS program, which would still apply to vessels in the Common Pool. Successful targeting of stocks with greater ACEs (e.g., GB haddock) would allow sector vessels to spend more time fishing for more abundant stocks whose catch was artificially constrained by DAS allocations designed to reduce effort on stocks that are overfished and/or experiencing overfishing (e.g., SNE/MA winter flounder). An overall reduction in the 2010 groundfish mortality under Amendment 16 would result in reduced impacts to stocks fleetwide compared to previous years. Overall, the effect of this exemption, regardless of any changes in fishing effort, would be a negligible impact on allocated target stocks.

No Trip Limits

Trip limits are designed to limit the number of fish caught per trip. When Common Pool fishermen reach a trip limit for a certain species, they are obligated to discard any additional, marketable catch of that stock from that trip in order to comply with trip limits. This is referred to as "regulatory discard." Since sector members' catch would be regulated by the sector's ACE, trip limits are not needed as an effort control on mortality. An exemption from trip limits would eliminate the regulatory discard of allocated target species resulting in a higher proportion of the catch being retained compared to the Common Pool, and would likely have a low positive effect on allocated target stocks because all catch would count against sector members' ACE thereby eliminating regulatory discard and related mortality.

Seasonal Closed Area on Georges Bank in May

This restriction was intended to reduce fishing mortality on GB stocks, particularly GB cod. This universal exemption would allow fishing on Georges Bank during a month that may have a higher abundance of fish. Because the SHS would be fishing under ACEs for allocated target stocks, the intended goal of the seasonal closed area to limit mortality of GB stocks would be achieved. Overall, the effect of this exemption relative to vessels operating within the Common Pool would not change mortality and would result in a negligible impact on allocated target stocks.

Gulf of Maine Rolling Closures

Gulf of Maine rolling closures were adopted primarily to reduce catches of GOM cod; however, these closures have also served to reduce fishing activity on cod spawning aggregations. Allowing fishing activities in these areas closed to Common Pool groundfishermen within the Gulf of Maine would result in a loss of this protection for spawning fish. Although ACEs provide the overall control on allocated target stock mortality, there is a potential for low negative impacts from fishing on spawning

aggregations. Therefore, this exemption is expected to result in a low negative impact on allocated target stocks when compared with vessels operating within the Common Pool.

Six-inch Cod-end Exemption on Georges Bank when using Haddock Separator or Ruhle Trawl

This exemption would allow the use of a six-inch mesh cod-end when sector vessels fish with selective trawl gear, which would facilitate selective fishing for haddock by SHS vessels. This exemption would not be expected to substantially change mortality since the catch would be controlled by ACE, likely resulting in a negligible impact on allocated target species. It is possible that the exemption could increase harvest of sub-legal size fish; however, this is less likely to affect species that swim closest to the bottom (e.g., cod) because of the nets design. The impact of increased retention of sub-legal catch may be shifts in stock composition. Therefore, the impacts from this exemption would likely be negligible since overall mortality would be controlled by the ACE, but could result in a low negative impact on allocated target stocks if it results in an increase in sub-legal sized fish caught.

Operations Plan under the Proposed Action

Each sector Operations Plan is unique. However, the harvest rules for all sector Operations Plans tend to fall into one of four broad categories: quota management, monitoring, administrative, and gear restriction. In addition, the harvest rules within each category tend to have similar impacts.

Section 3.1 provides a description of the harvest rules of the SHS Operations Plan. The summary category for each of these harvest rules and their likely impacts on allocated target stocks are provided in Table 5.1.2-2.

Sustainable Harvest Sector-Requested Exemptions

Because the SHS would not be constrained by the DAS reduction for groundfish (from FY 2009) that the Common Pool is being subjected to in FY 2010, the amount of fishing effort, gear days, and related impacts could increase or decrease relative to the Common Pool. However, for purposes of this analysis fishing effort and gear days are assumed to increase slightly. It remains a matter of implementation and monitoring to quantify actual changes to fishing efficiency or fishing effort as the result of SHS operations. Sector self-management flexibility and accounting systems as embodied in Amendments 13 and 16 and supporting documents are expected to facilitate the ability of the SHS to fully utilize and manage their allocations, avoid overfishing, and focus their efforts on filling their ACE for allocated target stocks.

SHS members would implement all monitoring and reporting requirements as mandated in Amendment 16 and any additional requirements developed by the SHS. An expected effect is the reduction in the potential to exceed target mortality rates through real-time management by SHS. Another effect of Sector operations is expected to be the conversion of more vessel catch into landings and less discard than would otherwise occur in the Common Pool. Conversely, vessels operating within the Common Pool (the No-Action Alternative) would continue to allow varying impacts on allocated target stocks because of less conversion of catch into landings (greater proportion discarded) resulting from trip limits without the allocation constraints imposed by ACE. The SHS represents a small proportion of the fleet. So in the context of biological effects, the impacts of the SHS Operations Plan, as compared to operations within the Common Pool, would represent a negligible change to a small proportion of the entire groundfish fleet (represented in Table 3.1-1)

TABLE 5.1.2-2 Sustainable Harvest Sector Harvest Rules Summary for Allocated Target Stocks		
Summary Category	**Harvest Rules Assigned to the Summary Category**	**Impacts**
Quota Management	▪ Aggregate Allocation ▪ Full Retention of Legal Sized Fish ▪ Data Reconciliation ▪ Sector Call in ▪ Hot Spot Reporting ▪ Discard Rate	Harvest rules assigned to this category relate to actions that would ensure a Sector's ACE is not exceeded. The overall impact to allocated target stocks would be positive since these harvest rules would ensure that ACEs are not exceeded.
Monitoring	▪ Dockside Monitoring	Harvest rules assigned to this category relate to the collection of data. These activities would ensure the Sector's ACE was not exceeded. Therefore, the overall impact to allocated target stocks would be positive.
Administrative	▪ Days at Sea (DAS) ▪ DAS Pooling	Harvest rules assigned to this category relate to strictly administrative issues (e.g. transmitting data). They are not expected to affect the fishing effort or CPUE, and would result in a negligible impact to allocated target stocks.
Gear Restriction	▪ Haul Gillnets Once Every 7 Days ▪ Seasonal or Area Gear Restrictions	These restrictions would have negligible impacts to allocated target stocks because they should not impact amount of allocated species landed

The SHS requests Sector-specific exemptions, as outlined in Section 3.1.2.2. A description of the potential effects from each specific exemption is provided below.

1) Exemption from the 20-day spawning block out of the fishery required for all vessels

The original requirement for the 20-day spawning block was implemented as a mortality-control measure with associated benefits to provide protection for spawning aggregations. This exemption would allow all SHS vessels to be exempted from the 20-day spawning block out that Common Pool vessels must take during the peak period for cod spawning. A potential effect of exempting SHS vessels is to increase harvest of actively spawning groundfish and to disrupt spawning behavior, which would have a proportionally greater effect on stock production than harvest of non-spawning cod. However, the magnitude of the impacts of this exemption is controlled by the relatively small number of vessels that would be in the SHS.

In FY 2010, the SHS would operate under ACEs for allocated target species. Once an ACE is achieved for any allocated target stock, SHS members must stop fishing in that stock area with any gear capable of catching groundfish unless additional ACE is obtained. The potential result of this exemption is for Sector vessels to redistribute fishing effort over the year, as opposed to the vessels within the Common Pool adhering to the block out. Without input controls on fishing effort, it is reasonable to expect that SHS vessels may exercise an option to increase fishing effort relative to the Common Pool. This increased fishing effort may occur at a time and in areas where fish are aggregating, so spawning

fish could make up a larger proportion of the Sector's catch. However, the potential impact of this exemption is controlled predominantly by the ACEs for each allocated target stock. Overall, the effect of exempting the 20-day block out relative to vessels operating within the Common Pool, regardless of any changes in fishing effort, would be a negligible impact on allocated target stocks.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

In the Common Pool fishery, gillnet vessels must take a total of 120 days out of the gillnet fishery during the fishing year. Each period of time taken must be a minimum of 7 consecutive days. At least 21 days of this time must be taken between June and September of each fishing year. A 20-day spawning season time out period is credited toward the 120 days time out of the gillnet fishery.

This block out requirement was implemented to reduce the possibility that gillnet vessels could compensate for other effort reduction measures by extending soak time between trips. The requirement to take time out during the summer months was intended to apply the time out requirement when gillnet activity is highest. These gillnet regulations were authorized under various frameworks as a means to limit fishing mortality by vessels using gillnets to the same extent that vessels using other gear types were restricted by cuts in allocated DAS and specific gear requirements.

The result of this exemption is to allow gillnet vessels within the SHS to redistribute fishing effort over the year. The magnitude of the impacts of this exemption is controlled predominantly by the ACEs for each allocated target stock. Without input controls on fishing effort, as there would be within the Common Pool, it is reasonable to expect that Sector vessels could increase fishing effort if they have not achieved their ACE for any stock within that stock area.

The resulting effect of Sector operations with exemption from the 120-day block relative to vessels operating within the Common Pool, regardless of any changes in fishing effort, would be a negligible impact on allocated target stocks. The SHS represents a small proportion of the fleet. So in the context of biological effects, the impacts of this exemption, as compared to operations within the Common Pool, would represent a negligible change to a small proportion of the entire fleet.

3) Exemption from the limit on the number of gillnets imposed on the Day gillnet category, but not to exceed 150 nets per permit

This exemption proposes to increase the number of nets for Day gillnetters per permit, removing an effort control and resulting mortality control related to the number of nets per vessel. The proposed exemption could result in longer soak times because of the time required to retrieve and process more nets than would be allowed per vessel fishing within the Common Pool. Longer soaks could result in undocumented groundfish mortality due to losses such as predation and net drop-out. Longer soaks could also result in groundfish mortality that is neither recorded nor applied to the Sector's ACE as untended gillnets "ghost fish." However, fishermen must abide by the sector harvest rule of not soaking nets longer than 7 days and untended gillnets can lead to loss of nets, providing an incentive for fishermen to haul nets more frequently. There may also be increased discards due to predation damage which would be undocumented if the entire fish is consumed. Only those damaged fish that are brought aboard and subsequently discarded would be documented. To the extent that undocumented losses occur, there is a potential for an increased mortality rate on allocated target stocks. In comparison, SHS vessels fishing within the Common Pool would have less potential for undocumented groundfish mortality.

The Sector would be constrained by ACE and would operate few gillnet vessels. Overall, the impact of this exemption is expected to be negligible relative to vessels operating within the Common Pool.

4) Exemption from the length and horsepower restrictions on DAS leasing

The DAS leasing restrictions were imposed as a means of controlling mortality by reducing fishing effort. This exemption would potentially increase DAS available to SHS vessels to pursue monkfish. The magnitude of the effects of this exemption on allocated target stocks is controlled by the obligation of Sector vessels to fish under ACEs for groundfish. The exemption from DAS leasing restrictions would decrease the probability that SHS participants would be forced to discard monkfish because they lacked either groundfish or monkfish DAS. While discards would be reduced, the exemption is not expected to alter fishing effort, and thus effects on allocated target stocks would be negligible relative to the Common Pool.

Summary of Direct and Indirect Impacts of the Proposed Action on Allocated Target Species

The SHS requested exemptions are expected to result in a redistribution of fishing effort over the year, the potential to catch a greater proportion of spawning fish, potential increases in mortality of allocated target stocks due to longer soak times, and reduced discards of monkfish. In general, the anticipated effect of SHS formation and operation in FY 2010 is to convert vessel catch into more landing and less discard while not exceeding ACEs as well as the reduction of potential to exceed ACEs through real-time management by the SHS. The overall impact of universal exemptions, Operations Plan requirements, and Sector-specific exemptions on allocated target species is expected to be negligible.

5.1.2.2 No-Action Alternative

Under the No-Action Alternative, these vessels would remain in the Common Pool and would therefore operate under the regulations applicable to the Common Pool. The No-Action Alternative would subject these vessels to the input control measures, implemented by Amendment 13, subsequent framework adjustments, and Amendment 16 to rebuild overfished stocks and end overfishing on those stocks where it is occurring. Through these framework adjustments, trip limits for overfished stocks would be attuned and ACLs and AMs would be implemented.

Under the No-Action Alternative, the SHS would not have an ACE allocation for groundfish. The primary difference between operation in the Common Pool or in a sector is the method of addressing stock mortality that is established annually and allocated as sub-components of ACLs (NEFMC 2009a). Allocations in the Common Pool are controlled by DAS that are based on historic maximum annual DAS allocation per permit (described in Amendment 13; FW 42). DAS allocations are input controls, setting an annual maximum on the effort that the Common Pool could expend. Under measures proposed by Amendment 16, Common Pool vessels are subject to a 50 percent reduction in DAS from their FW 42 allocation. Participating vessels in the Common Pool are regulated by an established daily trip limit. Daily limit is per 24-hours of DAS or any portion thereof. Vessels in the Common Pool are not constrained by individual allocations and consequently have little incentive to stop fishing upon reaching their daily possession limit for some allocated target stocks if they are still catching other marketable allocated target stocks within possession limits. Vessels would continue to fish under regulations that restrict fishing effort and methods and rates of discard and trip limitations in the Common Pool would continue at historic levels, or as otherwise mandated by Amendment 16.

The vessels fishing within the Common Pool (No-Action) would have a negligible impact on allocated target stocks when to the proposed SHS operations (Proposed Action).

5.1.3 Non-allocated Target Species and Bycatch

5.1.3.1 Proposed Action

Under the Proposed Action, the SHS would receive an ACE, which would set absolute maximum poundage of each allocated target stock that the SHS would be allowed to catch. Monkfish, skates, and spiny dogfish are the predominate non-allocated target species (i.e. monkfish and skates) or bycatch (i.e., dogfish) expected to be caught by sectors and are managed under separate FMPs, as described in Section 4.3. Non-allocated target species and bycatch would be components to the landings accruing to the SHS as they conduct groundfishing activities.

In general, the catch of non-allocated target species and bycatch could theoretically go down under Sector management if the increased flexibility in the magnitude. timing, and location of fishing efforts increases the harvest of allocated target species relative to non-allocated target species and bycatch. If increased flexibility by the SHS improves the harvest of target species similarly to non-allocated target species then the relative catch rate of non-allocated target species and bycatch would be controlled by ACE. If this increased flexibility does not substantially enhance selectivity, and catch rates of allocated and non-allocated target species and bycatch are not related, the catch of non-allocated target species and bycatch could be highly variable as a result of SHS operations.

In accounting for discards for vessels operating in the Common Pool, a discard rate by gear type is determined and applied to the landings for each trip (NEFMC 2009a). NMFS applies this discard approximation in one of two ways: either based on the total landings of a stock by gear, or on a trip-by-trip basis. The first approach is easier to administer, but does not ascribe discards for each vessel on an individual basis. Conversely, for Sector vessels operating within SHS, both landings and discards of allocated target species must be accurately monitored to ensure that Sector catches are actually limited to the ACE. Sectors would be required to develop a monitoring system that meets NMFS standards that would adequately monitor discards by Sector vessel (NEFMC 2009a). Beneficially, more accurate information on discard rates could be expected from vessels operating within the SHS.

Ratios of target species to bycatch are variable between gear types used. For example, gillnets using appropriate mesh are generally more selective than either trawls or hooks, and mobile gears tend to have the highest overall discard rates (NOAA 2003). Sector vessels are not proposing to change general gear types from that which they currently operate under the Common Pool and thus are not expected to alter the ratio of discards to allocated target species experienced within the Common Pool. It is also reasonable to assume for purposes of this analysis that Sector vessel effort resulting in a high proportion of non-allocated target species and bycatch would be rare, is not economically sustainable, and would result in shifts in fishing strategy to improve allocated target stock catches. Therefore, non-allocated target species and bycatch are expected to be caught in a relatively constant proportion to allocated target stocks. The proportion of allocated target stocks to non-allocated target species and bycatch is also not expected to differ among vessels operating within SHS or operating within the Common Pool.

Because sectors are relatively new to the Northeast multispecies fishery, there is little empirical evidence upon which to evaluate the ability of sector fishermen to target specific stocks or redirect fishing effort to another fishery. Although possible, it is unlikely that sector participants would target other species (e.g., lobster, summer flounder, etc.) under sector management more often than under Common Pool regulations. Under sector management, a sector participant[12] would have all groundfish catch

[12] Fishing with non-exempt gear (that is, any gear capable of catching Northeast multispecies) outside of an exempted fishery (for example, Dogfish and Monkfish Gillnet Fishery in the GOM/GB Dogfish and Monkfish Gillnet Fishery Exemption Area)

(including calculated discards) counted against the sector's ACE. Thus, a sector vessel fishing[13] for lobsters with non-trap gear, skates, monkfish, or dogfish would have any groundfish catch counted against the sector's ACE. In addition, when the sector reaches the individual ACE for a stock, all sector members must cease all fishing activities[14] within that stock area. This disincentive would likely outweigh any potential gains from redirecting to other fisheries for the majority of sector members.

For example, if a sector participant were to target lobsters with non-trap gear (e.g., trawl gear), such activity would be considered as fishing for groundfish and the sector's ACEs would be reduced by the vessel's groundfish catch (including calculated discards) for each allocated species in the area. The participant would risk reaching their sector's ACE for any stock in that area and if any ACE were achieved, the entire sector would be prohibited from fishing in that area for the remainder of the fishing year. Therefore, there is a low potential for adverse impacts to other fisheries, such as lobster, as a result of displaced fishing effort. The extent to which a directed lobster fishery will emerge under the Northeast multispecies fishery as an indirect effect from the implementation of sectors is speculative at this point. NMFS will review harvest data to monitor for these concerns and if there appears to be an alarming increase in the harvest of lobster by sector vessels, NMFS will coordinate with the Council and the ASMFC to more specifically address these issues.

In contrast to the Common Pool, the SHS would operate under an ACE for 14 Northeast groundfish stocks (see Section 4.2). Once the SHS achieves an ACE for any allocated target stock, commercial fishing with gear capable of catching groundfish in that stock area must cease unless the Sector is able to acquire additional ACE. Sector management is expected to facilitate the ability of the SHS to fully utilize and manage their multiple allocations, avoid overfishing, and focus their efforts on catching their ACE for allocated target stocks. This would also limit the catch of non-allocated target species and bycatch in these stock areas. Conversely, vessels fishing in the Common Pool are controlled by effort (DAS) and trip limits, and landings are affected by an ACLs allocated to the entire fleet. The SHS represents a small proportion of the entire groundfish fleet. So in the context of biological effects, SHS operations would exert a small change compared to overall operations of the multispecies fishery.

The anticipated effect of SHS formation and operation under allocations constrained by ACEs (as described in Amendment 16) would be to convert more vessel catch into landings and less discard than if those same vessels were to fish within the Common Pool. In contrast, vessels operating within the Common Pool (the No-Action Alternative) would receive trip limits without the allocation constraints imposed by ACEs. This would continue to allow varying impacts on non-allocated target species and bycatch because of less conversion of allocated target stock catches into landings (greater proportion discarded).

Amendment 16 - Universal Exemptions

Universal exemptions would be granted to all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). The effects of specific universal exemptions are summarized below.

No Days-At-Sea Needed when Groundfishing

The purpose of Northeast multispecies DAS accounting is to control groundfish mortality by limiting fishing effort to a set number of days per groundfish vessel. Since SHS members would be

[13] outside an exempted fishery

[14] with non-exempt gear and outside exempted fisheries (excluding recreational fishing)

operating under an ACE that clearly defines the maximum amount of each groundfish stock that could be caught, it is no longer necessary to apply DAS to this group of fishermen to control groundfish mortality. It is expected that this universal exemption would allow vessels to target select species, and could result in an increase in overall fishing time, as compared to the amount of time permitted under the DAS program, which would still apply to vessels in the Common Pool. Successful targeting of stocks with greater ACEs (e.g., GB haddock) would allow sector vessels to spend more time fishing for more abundant stocks whose catch was artificially constrained by DAS allocations designed to reduce effort on stocks that are overfished and/or experiencing overfishing (e.g., SNE/MA winter flounder). An overall reduction in the 2010 groundfish mortality under Amendment 16 would result in reduced impacts to stocks fleetwide compared to previous years. The Sector would be fishing under ACEs for allocated target stocks, which would provide the predominant control over impacts to non-allocated target species and bycatch. Overall, the effect of this exemption relative to these vessels operating within the Common Pool, regardless of any changes in fishing effort, would be a negligible impact on non-allocated target species and bycatch.

No Trip Limits

Trip limits are designed to limit the number of fish caught per trip. When Common Pool fishermen reach a trip limit for a certain species, they are obligated to discard any additional, marketable catch of that stock from that trip in order to comply with trip limits. This is referred to as "regulatory discard." Since SHS members' catch would be regulated by a sector's ACE, trip limits are not needed as an effort control on mortality. An exemption from trip limits would eliminate the regulatory discard of allocated target stocks resulting in a higher proportion of the catch being retained compared to the Common Pool, and would likely have a low positive effect on allocated target stocks because all catch would count against sector members' ACE thereby eliminating regulatory discards and related mortality. This universal exemption would likely result in an increased CPUE, which would potentially decrease the levels of discard of non-allocated target species and bycatch if that increase caused ACE to be achieved in a shorter period of time. An overall reduction in discards resulting from this exemption would have a low positive effect on non-allocated target species and bycatch.

Seasonal Closed Area on Georges Bank in May

This restriction was intended to reduce fishing mortality on allocated GB stocks, particularly GB cod. This universal exemption would allow fishing for allocated target stocks on Georges Bank during a month that may have a higher abundance of fish and allow targeting of allocated target species where fishing effort has previously focused on other fisheries in this area in May. During the May closure, other fisheries have been allowed in the area, so fishing activity is not completely excluded and groundfishing has been allowed in other areas during this timeframe.. Therefore, this exemption would result in a negligible impact on allocated target stocks and, thus, non-allocated target species and bycatch when compared with these vessels operating within the Common Pool.

Gulf of Maine Closures

Gulf of Maine rolling closures were adopted primarily to reduce catches of allocated target species, particularly GOM cod; however, these closures have also served to reduce fishing activity on cod spawning aggregations. Allowing fishing activities in these areas otherwise closed to Common Pool groundfishermen within the Gulf of Maine would remove a mortality control in place to protect spawning fish and would allow targeting of allocated target species when fishing effort has been more likely to focus on other fisheries. During this closure, other types of fisheries have been allowed in to the area, so fishing activity is not completely excluded. Therefore, this exemption would result in a negligible impact

on non-allocated target species and bycatch when compared with these vessels operating within the Common Pool.

Six-inch Cod-end Exemption on Georges Bank if using Haddock Separator or Ruhle Trawl

This exemption would allow the use of a six-inch mesh cod-end when sector vessels fish with selective trawl gear, which would facilitate selective fishing for haddock by SHS vessels. Because the primary non-allocated target species and bycatch tend to be large, reducing the mesh size of the cod-end would not likely change bycatch rates. This exemption would result in a negligible impact on non-allocated target species and bycatch when compared with these vessels operating within the Common Pool.

Operations Plan under the Proposed Action

Each sector Operations Plan is unique. However, the harvest rules for all sector Operations Plans tend to fall into one of four broad categories: quota management, monitoring, administrative, and gear restriction. In addition, the harvest rules within each category tend to have similar impacts.

Section 3.1 provides a description of the harvest rules of the SHS Operations Plan. The summary category for each of these harvest rules and their likely impacts are provided in Table 5.1.3-1.

TABLE 5.1.3-1
Sustainable Harvest Sector Harvest Rules for Non-allocated Target Species and Bycatch

Summary Category	Harvest Rules Assigned to the Summary Category	Impacts
Quota Management	▪ Aggregate Allocation ▪ Full Retention of Legal Sized Fish ▪ Data Reconciliation ▪ Sector Call in ▪ Hot Spot Reporting ▪ Discard Rate	Harvest rules assigned to this category relate to actions that would ensure a sector's ACE is not exceeded. Harvest rules assigned to this category are not expected to affect the landings of non-allocated target species and bycatch and would result in a negligible impact to non-allocated target species and bycatch.
Monitoring	▪ Dockside Monitoring	Harvest rules assigned to this category relate to the collection of data. Although these activities would not have a direct affect on non-allocated target species and bycatch, the overall result would be positive as monitoring would provide better data on fishing practices and catch composition and distribution, thereby improving management.
Administrative	▪ Days at Sea (DAS) ▪ DAS Pooling	Harvest rules assigned to this category relate to strictly administrative issues (e.g. transmitting data). They are not expected to affect the fishing effort or CPUE, and would result in a negligible impact to non-allocated target species and bycatch.
Gear Restriction	▪ Haul Gillnets Once Every 7 Days ▪ Seasonal or Area Gear Restrictions	These restrictions would have negligible impacts to non-allocated target species and bycatch because they should not impact amount of non-allocated or bycatch species landed

Sustainable Harvest Sector-Requested Exemptions

For purposes of this analysis, overall fishing effort and gear days are assumed to increase slightly based on moving from DAS to sector management. It remains a matter of implementation and monitoring to quantify actual changes in fishing efficiency or fishing effort as the result of Sector operations. As analyzed for allocated target stocks, Sector self-management flexibility and accounting systems through Amendments 13 and 16 and supporting documents are expected to facilitate the ability of the SHS to fully utilize and manage their multiple allocations, avoid overfishing, and focus their efforts on filling their ACE for allocated target stocks, which would control the catch of non-allocated target species and bycatch.

SHS members would implement all monitoring and reporting requirements as mandated in Amendment 16 and any additional requirements developed by the Sector. An expected effect is the reduction of the potential to exceed target mortality rates, and therefore also non-allocated target species and bycatch, through real-time management by SHS. Vessels operating within the Common Pool (the No-Action Alternative) would receive trip limits without the allocation constraints imposed by ACEs. The SHS represents a small proportion of the entire groundfish fleet. So in the context of biological effects, SHS operations with requested exemptions would exert a negligible change compared to operations within the multispecies fishery.

In addition to the universal exemptions, the SHS requests Sector-specific exemptions, as outlined in Section 3.1.2.2. The general discussion of proposed exemptions presented in Section 5.1.2.1 (Allocated Target Stocks) is also applicable to non-allocated target species and bycatch as described below.

1) Exemption from the 20-day spawning block out of the fishery required for all vessels

This exemption would allow all SHS vessels to be exempted from the 20-day spawning block out that Common Pool vessels must take. In FY 2010, the SHS would operate under ACEs for allocated target species. Once an ACE is achieved for any allocated target stock, impacts to non-allocated target species and bycatch would cease because SHS vessels must stop fishing in that stock area with any gear capable of catching groundfish unless they can obtain more ACE. The potential result of this exemption is for SHS vessels to redistribute fishing effort over the year, as opposed to vessels within the Common Pool adhering to the block out. However, the potential impact of this exemption is controlled predominantly by the ACEs for each allocated target stock. Based on the assumption of a relatively constant ratio of non-allocated target species and bycatch to allocated target stocks, ACEs would also function as a dominant control to limit impacts to non-allocated target species and bycatch. Overall, the effect of exempting SHS vessels from the 20-day block relative to vessels operating within the Common Pool, regardless of any changes in fishing effort, would be a negligible impact on non-allocated target species and bycatch.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

The result of this exemption is to allow gillnet vessels within the SHS to redistribute fishing effort over the year, as opposed to adhering to the block out. The magnitude of the impacts of this exemption is controlled predominantly by the ACEs for each allocated target stock. Based on the assumption of a relatively constant ratio of non-allocated target species and bycatch to allocated target stocks, ACEs would also function as a dominant control to limit impacts to non-allocated target species and bycatch. The resulting effect of Sector operations with exemption from the 120-day block relative to these vessels operating within the Common Pool, regardless of any changes in fishing effort, would be expected to result in a negligible impact on non-allocated target species and bycatch. Further, the SHS represents a

small proportion of the fleet. So in the context of biological effects, the impacts of this exemption, as compared to operations within the Common Pool, would represent a negligible change to a small proportion of the entire fleet.

3) Exemption from the limit on the number of gillnets imposed on the Day gillnet category, but not to exceed 150 nets per permit

This exemption proposes to increase the number of nets for Day gillnetters per permit, removing an effort control and mortality control on the number of nets per vessel. The proposed exemption could result in longer soak times because of the time required to retrieve and process more nets than would be allowed per vessel fishing within the Common Pool. Longer soaks could result in undocumented mortality of non-allocated target species and bycatch due to losses such as predation and net drop-out. Longer soaks could also result in groundfish mortality that is not documented in untended gillnets. However, fishermen must abide by the Sector harvest rule of not soaking nets longer than 7 days and untended gillnets can lead to loss of nets, providing an incentive for fishermen to haul nets more frequently. There may also be increased discards due to predation damage which would be undocumented if the entire fish is consumed. Only those damaged fish that are brought aboard and subsequently discarded would be documented. To the extent that undocumented losses occur, there is a potential for an increased mortality rate on non-allocated target species and bycatch. As established, there is no reason to expect that increasing net use under this exemption would differentially impact non-allocated target species and bycatch.

Even though there is a potential for certain mechanisms to create greater mortality, the Sector would be operating under an ACE and would be operating few gillnet vessels. Overall, the impact of this exemption is expected to be negligible relative to vessels operating within the Common Pool. Further, the potential magnitude of the impacts of this exemption would be also limited by the relatively small proportion of the overall groundfish fleet that would be exempted.

4) Exemption from the length and horsepower restrictions on DAS leasing

The DAS leasing requirement is related to retention of monkfish bycatch while vessels participate in the multispecies fishery. Among Common Pool participants, groundfish DAS allow a vessel to retain some monkfish. While groundfish fishermen operating as part of a sector would be exempt from DAS regulation for the multispecies fishery, they would still need to expend groundfish DAS to land monkfish bycatch under some circumstances. The exemption from DAS leasing restrictions would decrease the probability that SHS participants would be forced to discard monkfish because they lacked either groundfish or monkfish DAS. While discards would be reduced, the exemption is not expected to alter fishing effort, and thus effects on non-allocated target species and bycatch, including monkfish, would be negligible relative to the Common Pool.

Summary of Direct and Indirect Impacts of the Proposed Action to Non-allocated Target Species and Bycatch

In general, it is expected that the impacts on non-allocated target species and bycatch would be directly related to operations conducted for allocated target stocks under allocations controlled by ACEs, and there would be little if any increase in impacts to non-allocated target species and bycatch under Sector management relative to the Common Pool. Real time management by SHS is expected to reduce the potential to exceed ACEs and therefore impacts to non-allocated target species and bycatch. The SHS would represent a small proportion of the entire groundfish fleet. So in the context of biological effects, SHS operations with requested exemptions would exert a negligible change compared to operations within the Common Pool.

5.1.3.2 No-Action Alternative

Under the No-Action Alternative, these vessels would remain in the Common Pool. The No-Action Alternative would subject these vessels to the input control measures implemented by Amendment 13, subsequent framework adjustments, and Amendment 16 to rebuild overfished stocks and end overfishing on those stocks where it is occurring. Through these framework adjustments, trip limits for overfished stocks would be attuned and ACLs and AMs would be implemented. It is possible that these conditions would not be economically viable for some proposed SHS members.

Under the No-Action Alternative, the SHS would not have an ACE allocation of groundfish. The primary differences between operation in the Common Pool or in a sector are the methods of addressing stock mortality that is established annually and allocated as sub-components of ACLs (NEFMC 2009a). Allocations in the Common Pool are DAS based on historic maximum annual DAS allocation per permit (described in Amendment 13; FW 42). DAS allocations are input controls, setting an annual maximum on the effort that the Common Pool could expend. Under measures proposed by Amendment 16, Common Pool vessels would be subject to a 50 percent reduction in DAS from their FW 42 allocation and having all DAS counted at a rate of 24-hours. Participating vessels in the Common Pool are regulated by an established daily trip limit. Daily limit is per 24-hours of DAS or any portion thereof. Participating vessels in the Common Pool are not constrained by individual allocations and consequently have little incentive to stop fishing upon reaching their daily possession limit for some allocated target stocks if they are still catching other marketable stocks within possession limits. Vessels would continue to fish under regulations that restrict fishing effort and methods and rates of discard and trip limitations in the Common Pool would continue.

Considering all factors, the overall effect of these vessels fishing in the Common Pool (No-Action) is expected to be negligible for non-allocated target species and bycatch compared to the proposed SHS operations (Proposed Action).

5.1.4 Protected Resources

This section addresses the likely impacts of the Proposed Action and No-Action Alternative on protected resources that occur within the Northeast multispecies fishing area.

5.1.4.1 Proposed Action

The SHS would fish for allocated target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines). As described in Section 4.4.4, these gear types are considered Tier 2 fisheries (gillnets are Category I [frequent incidental mortality/injury], trawls are Category II [occasional incidental mortality/injury], and hook and line gear are Category III [incidental mortality/injury is unlikely]). The primary determinant of how potential impacts of sectors may differ from the Common Pool is based on whether gear days would tend to increase, decrease, or remain consistent. It is possible that Sector vessels may spend fewer days at sea under the Proposed Action as Sector ACEs could be reached within a shorter period of time due to the elimination of trip limits.

Conversely, the SHS would no longer be limited by DAS, and it is feasible that the Sector could have more fishing days before reaching their ACEs than it would if the vessels were in the Common Pool with limited DAS. More fishing days could result in increased impacts to sea turtles and potentially other protected resources than those participants operating under Common Pool rules. Even if gear days increased as a result of the proposed measures in Amendment 16 and Sector-specific measures, the resulting gear days would be less than historical levels due to substantial reductions in allowable harvest.

Therefore, impacts to the protected resources from a potential increase in gear days would not be expected to exceed historic impact levels associated with the Northeast multispecies fisheries.

Amendment 16 - Universal Exemptions

Universal exemptions would be granted to all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). The effects of specific universal exemptions are summarized below.

No Days-At-Sea Needed when Groundfishing

The purpose of Northeast multispecies DAS accounting is to control groundfish mortality by limiting fishing effort to a set number of days per groundfish vessel. Since SHS members would be operating under an ACE that clearly defines the maximum amount of groundfish stocks that could be caught, it is no longer necessary to apply DAS to this group of fishermen to control groundfish mortality. It is expected that this universal exemption would allow vessels to target select species, and could result in an increase in overall fishing time, as compared to the amount of time permitted under the DAS program, which would still apply to vessels in the Common Pool. An overall reduction in the 2010 groundfish mortality under Amendment 16 would result in reduced impacts to protected resources fleetwide compared to previous years but because of an ACE controlling fishing efforts of sector members instead of DAS, sector members would have more impacts to protected resources compared to the Common Pool. An increase in fishing time would potentially result in an increased number of interactions between protected resources and deployed gear compared to the Common Pool. Therefore, it is expected that this exemption would result in a low negative impact to protected resources.

No Trip Limits

Trip limits are designed to limit the number of fish caught per trip. When Common Pool fishermen reach a trip limit for a certain species, they are obligated to discard any additional, marketable catch of that stock from that trip in order to comply with trip limits. This is referred to as "regulatory discard." Since Sector members' catch is regulated by the Sector's ACE, trip limits are not needed as an effort control on mortality. While CPUE may increase within a sector, the ability to selectively target abundant stocks may increase overall gear days relative to the Common Pool. This would increase fishing time leading to the potential for interactions. Therefore, it is expected that this exemption would likely result in a low negative impact to protected resources.

Seasonal Closed Area on Georges Bank in May

Georges Bank seasonal closures were adopted primarily to reduce catches of GB cod; however, these closures have also served to reduce fishing activity on cod spawning aggregations. This exemption would allow fishing activities in these areas otherwise closed to Common Pool groundfishermen within the Georges Bank during a period that may have a higher abundance of fish. In May, other fisheries are allowed in to the area, so fishing activity is not completely excluded. It is expected that this exemption could result in an increased number of interactions between deployed gear and protected resources as the protected resources may occur in higher concentrations in areas of abundant fish. Therefore, it is expected that this exemption would result in a low negative impact on protected resources.

Gulf of Maine Closures

Allowing sector fishing activities in areas otherwise closed to Common Pool groundfishermen within the Gulf of Maine would likely result in an increased number of interactions between deployed gear and protected resources should any protected species occur in a higher abundance in these areas. Although the ALWTRP, which includes such measures as pinger use, would be implemented in these areas, the measures are not 100 percent effective at avoiding interactions with protected resources. Therefore, this exemption would likely result in a low negative impact on protected resources.

Six-inch Cod-end Exemption on George's Bank if using Haddock Separator or Ruhle Trawl

The use of a smaller mesh size on haddock separators or Ruhle trawls would have a negligible effect on protected resources as the minor reduction in mesh size would not alter the expected rate of entanglement.

Operations Plan under the Proposed Action

Each sector Operations Plan is unique. However, the harvest rules for all sector plans tend to fall into one of four broad categories: quota management, monitoring, administrative, and gear restriction. In addition, the harvest rules within each category tend to have similar impacts.

Section 3.1 provides a description of the harvest rules of the SHS Operations Plan. The summary category for each of these harvest rules and their likely impacts are provided in Table 5.1.4-1.

Sustainable Harvest Sector-Requested Exemptions

In addition to the universal exemptions, the SHS requests Sector-specific exemptions, as outlined in Section 3.1.2.2 and discussed below

1) Exemption from the 20-day spawning block out of the fishery required for all vessels

The exemption for the 20-day spawning block was originally implemented as a mortality-control measure to provide protection for spawning aggregations. As proposed, this exemption would allow all SHS vessels to be exempted from the 20-day spawning block out, which could allow effort to shift to the spring when fish prices and weather are more favorable and could result in increased catch efficiencies on target species. If fishing throughout the spawning period increases CPUE resulting in more efficient achievement of the ACE, this exemption would be expected to reduce the overall gear days, and thus reduce potential impacts to protected resources. However, if the ACE is not reached, the potential to fish during an additional 20 days throughout the year could slightly increase the number of gear days. As this exemption would only allow Sector members a maximum of 20 additional fishing days, the change in gear days would be negligible; however, as protected resources may be more prevalent in areas of high fish abundance, there is a potential for increased interaction between protected resources and deployed gear, resulting in a low negative impact to protected resources compared to the Common Pool. Although the potential shift in temporal effort would result in a low negative impact to protected resources, the overall reduction in the ACL for the entire multispecies fishery in FY 2010 would likely result in less overall potential interactions between protected resources and multispecies gear compared to previous years, regardless of whether the fishermen are in the Sector or the Common Pool.

TABLE 5.1.4-1 Sustainable Harvest Sector Harvest Rules Summary for Protected Resources		
Summary Category	**Harvest Rules Assigned to the Summary Category**	**Impacts**
Quota Management	▪ Aggregate Allocation ▪ Full Retention of Legal Sized Fish ▪ Data Reconciliation ▪ Sector Call in ▪ Hot Spot Reporting ▪ Discard Rate	Harvest rules assigned to this category relate to actions that would ensure a sector's ACE is not exceeded. Harvest rules assigned to this category and are largely administrative. They are not expected to affect the number of gear days fished and would result in a negligible impact to protected resources.
Monitoring	▪ Dockside Monitoring	Harvest rules assigned to this category relate to the collection of data. Although these activities would not have a direct affect on protected resources, the overall result would be positive as monitoring would provide better data on protected resources/fishing interaction to allow for better management.
Administrative	▪ Days at Sea (DAS) ▪ DAS Pooling	Harvest rules assigned to this category relate to strictly administrative issues. They are not expected to affect the number of gear days fished and would result in a negligible impact to protected resources.
Gear Restriction	▪ Haul Gillnets Once Every 7 Days ▪ Seasonal or Area Gear Restrictions	These restrictions would have negligible impacts to protected resources because the haul gillnet restriction applies to a small proportion of gillnet fleet compared to Common Pool, and there is no soak time limit for the Common Pool. Seasonal or area gear restrictions would also have negligible impacts because these restrictions may not be employed and if they are, would only apply to small proportion of the gillnet fleet.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

Under current regulations, gillnet vessels are required to refrain from fishing for a total of 120 days out of each fishing year. Each period of time taken must be a minimum of 7 consecutive days, and at least 21 days of this time must be taken between June and September of each fishing year, a time when sea turtles and whales are more prevalent in the Northeast multispecies area. The requirement to take time out during the summer months was intended as an allocated target species mortality control measure by vessels using gillnets. As SHS members would be constrained by the ACE allocation, the 120-day block out is no longer warranted to limit mortality to allocated target species. If fishing throughout the period increases CPUE resulting in more efficient achievement of the ACE, this exemption would be expected to reduce the overall gear days, and thus reduce potential impacts to protected resources. However, if the SHS targets one stock with increased selectivity to increase overall catch of the previously under utilized stock, the number of gear days may increase. Although there is a potential for gear days to increase or decrease, it is conservatively assumed for the purposes of this EA that this exemption would result in a minor increase in gear days due to the ability to utilize an additional 120 days if ACE were not attained. In addition, this exemption would allow fishing effort to shift so that additional days were fished between June and September, resulting in a low negative impact to protected

resources compared to the Common Pool. Although the potential shift in temporal effort would result in a low negative impact to protected resources, the overall reduction in the ACL for the entire multispecies fishery in FY 2010 would likely result in less overall potential interactions between protected resources and multispecies gear compared to previous years, regardless of whether the fishermen are in the Sector or the Common Pool.

3) Exemption from the limit on the number of gillnets imposed on the Day gillnet category, but not to exceed 150 nets per permit

The existing gillnet limit was intended to reduce fishing effort, fish mortality, and the potential for untended gear left to hold fishing grounds; however, the SHS has requested an exemption to this control measure that would allow up to 150 gillnets in the water per permit. The increase in the number of gillnets allowed in the water at one time could increase interactions with protected resources by allowing more time for animals to be caught. If additional nets would allow more efficient attainment of the ACE, it could decrease the overall number of soak hours throughout the year or during periods when protected resources may be more prevalent, resulting in a low positive impacts. However, it is not known whether the ACE would be achieved as part of this exemption so it is expected that this exemption would result in a low negative impact to protected resources due to the potential for increased gear days.

4) Exemption from the length and horsepower restrictions on DAS leasing

The DAS leasing restrictions were imposed as a means of maintaining the character of the fleet. The exemption from DAS leasing restrictions would decrease the probability that SHS participants would be forced to discard monkfish when lacking either a groundfish or monkfish DAS. Implementation of this exemption would not be expected to influence fishing effort, and any impact to protected resources would be negligible associated with implementation of the SHS Operations Plan relative to the Common Pool.

Summary of Direct and Indirect Impacts of the Proposed Action to Protected Resources

The SHS would be comprised primarily of bottom trawlers, with a few gillnetters and hook and line fishermen. Impacts to cetaceans and pinnipeds from the use of gillnets would be minimized by use of the Take Reduction Plans, as discussed in Section 4.4.4. Trawling is generally considered to have low impacts on most protected resources with the possible exception of sea turtles, pilot whales, and common and white-sided dolphins. Impacts to sea turtles would not be expected to be substantial due to the general distribution of sea turtles in more temperate areas. Impacts to small cetaceans and pinnipeds could occur but at present are unlikely to rise above the level of PBR. Bottom hook and line gear are generally considered to have a low impact on protected resources.

Upon approval of a sector, provisions of Amendment 16 would exempt that sector from some measures that would apply to the Common Pool such as the requirements for DAS limits, trip limits, area closures, and mesh size. These exemptions would generally allow for an increased chance of interactions between sector vessels and protected resources due to fishing activities in previously closed areas and an increase in gear days. The additive effect of the Universal Exemptions on protected resources would likely be low negative.

Each sector would also have a unique Operations Plan that includes multiple harvest rules. Harvest rules are generally administrative and would thereby result in negligible direct impacts to protected resources. Harvest rules that allow for dockside monitoring, however, would result in a low positive indirect impact to protected resources (see Table 5.1.4-1 for justification).

In addition to the exemptions granted to approved sectors by Amendment 16, the SHS has requested exemption to four additional regulations. Three exemptions would have a low negative impact to protected resources as they would likely result in an increase in gear days. The fourth exemption would result in a negligible impact to protected resources as it would not be likely to affect fishing effort. Cumulatively, if the SHS is approved, impacts to protected resources from exemptions granted under Amendment 16, the SHS Operations Plan, and the specific exemptions requested by SHS would likely result in a low negative impact due to an increase in gear days.

5.1.4.2 No-Action Alternative

Under the No-Action Alternative, the SHS Operations Plan would not be approved and these vessels would remain within the Common Pool. If the SHS was approved, the number of days that a vessel spent fishing could increase if the CPUE was low, thereby increasing the potential for interaction with protected resources. It should also be noted that ready attainment of ACE by the SHS by increasing the flexibility to target stocks could result in fewer gear days, which would decrease expected impacts to protected resources relative to the Common Pool; however, for purposes of this analysis, gear days are assumed to increase slightly. Since the ACLs for groundfish stocks will be greatly reduced by Amendment 16 to the Northeast Multispecies FMP, overall the impacts from the No-Action Alternative are likely to be low positive to protected resources relative to the SHS Operations Plan.

5.1.5 Human Communities/Social/Economic Environment

The SHS would be a group of self-selecting fishermen that have come together voluntarily and cooperatively for the purpose of efficiently harvesting an annual allocation of Northeast groundfish stocks. Under the Proposed Action, SHS members have developed a legally binding Operations Plan and would fish under a Sector-specific ACE in FY 2010. While still subject to general requirements specified in Amendment 16 in exchange for operating under an ACE, SHS members would be exempt from DAS and other effort control measures that limit the flexibility and opportunities available to fishermen. Under the No-Action Alternative, fishermen would remain part of the Common Pool and would operate under Common Pool rules.

Human community and economic impacts could be associated with SHS fishermen and/or ports. Impacts are driven by changes in fishery flexibility, opportunity, stability, certainty, and safety. Section 5.1.5.1 discusses the impacts associated with the Proposed Action; these are segregated into general impacts and impacts associated with specific SHS exemption requests. Section 5.1.5.2 discusses the impacts of the No-Action Alternative.

5.1.5.1 Proposed Action

This section identifies the human community and economic impacts, both positive and negative, associated with the Proposed Action. These impacts were identified by reviewing the available literature including the recent performance of the existing Georges Bank Cod Sectors and by considering the theoretical implications of sector formation. Potential impacts are broken into four broad categories: general impacts associated with moving from DAS based regulation to sector-based regulation, impacts associated with Amendment 16 universal exemptions, impacts associated with specific components of the Operations Plan, and impacts associated with each of the proposed Sector-specific exemptions.

Moving from DAS-based Regulation to Sector-based Regulation

Increased Vessel Profits and Opportunity

Measures designed to re-build groundfish stocks would likely reduce the revenue of individual fishermen and have negative impacts on communities that rely heavily on the Northeast multispecies fishery for the next several years. These negative impacts may also extend to other regional fishing communities. The flexibility and cooperation associated with sector formation would allow sector members to become more efficient and to time fishing to correspond with higher market prices. This increased efficiency coupled with the ability to time markets in a limited access fishery would allow SHS participants to retain a higher profit margin than Common Pool participants. This, in turn, may promote resource stewardship and increase fishing opportunities for future generations as increased profitability under sector management leads to continued use of sector management, including improved mortality control and monitoring.

Changing Shore-side Economic Activity

Any potential increase in vessel profitability associated with sector formation would help ensure that ancillary businesses such as gear, tackle, and bait suppliers; fish processing and transportation; marine construction and repair; and restaurants remain viable. This general increase in the level of economic activity would, in turn, help stabilize fishing communities and maintain their viability and cultural fabric. In addition, the ability to target previously under-utilized stocks could increase landings, which would tend to increase economic activity in the port of landing. Finally, this EA assumes that the overall number of gear days (and by extension vessels days and economic activity within the homeport) would increase slightly as the result of sector participation.

While the net effect of sector participation on shore-side economic activity is difficult to predict, it is likely to be negligible in ports that are relatively less dependent on commercial fisheries and generally positive among ports that are more dependent on commercial fishing.

Increased Safety

At Impact Informational Meetings held in 2007, fishermen reported that regulations have "boxed them in" to particular fisheries making it difficult or impossible for the fishermen to maximize their opportunities and or adjust to changing conditions. When combined with the inherent limitations of the relatively small vessels that characterize the Northeast groundfish fleet, fishermen report that regulations have reduced fishing opportunities to the point that it is difficult to guarantee a year-round income for fishery participants.

Through participation in a sector, fishermen would be insulated from many of the pressures identified above. For example, DAS limits and differential DAS counting combined with trip limits could discourage a return to port in inclement weather. These pressures would not exist under sector-based management.

Uncertainty Reduction

Vessels within the Common Pool could be affected by highly variable conditions such as bad weather during designated fishing windows or fish concentrations occurring in some locations made inaccessible by area closures. These variable conditions make it difficult to predict revenue streams and implement business and community plans. The allocation of ACE to sectors combined with increased fishing flexibility would allow sector fishermen and communities to more accurately estimate the revenue

flows that could be expected from sector participation. This uncertainty reduction is important to both fishermen and communities for planning purposes.

Focused Fishing Effort

The flexibility granted to sector members coupled with an ACE for each groundfish species would encourage sector participants to target their fishing efforts. By focusing effort on stocks that are traditionally under-utilized under the DAS system while remaining within established limits for the more fully utilized stocks, sector fishermen may be able to increase landings of specific stocks relative to what would have been achieved through their participation in the Common Pool. This would increase vessel profits which may, in turn, promote resource stewardship and increase fishing opportunities for future generations.

Cooperative Decision Making

Allowing fishermen to voluntarily organize and make decisions that impact all sector members and communities would foster interconnectedness among fishermen and fishing communities. By more closely aligning the profit incentive of individual fishermen with the goal of optimal fisheries management, sector formation may also promote resource stewardship within the community.

Consolidation within the Sector

As stated in the Amendment 16 Environmental Impact Statement (Section 4.2.3), sector vessels "would be allowed to pool harvesting resources and consolidate operations in fewer vessels if they desired…They [sectors] also provide a mechanism for capacity reduction through consolidation." Fishery management plans that allocate a quota and consolidate fleet capacity are often controversial because policies designed to increase efficiency in the fishery can reduce the number of fishing boats and fishermen. The issue of consolidation and the concern that excessive consolidation could occur due to sectors is addressed within the NEFMC sector goals, two of which are to (1) provide a mechanism for economics to shape the fleet rather than regulations (while working to achieve fishing and biomass targets) and (2) prevent excessive consolidation that would eliminate the day boat fishery.

In FY 2009, 38.8 percent of the permits which are now enrolled in the SHS were attached to vessels that actively fished for Northeast multispecies. For FY 2010, the SHS has 129 permits currently enrolled. Of those 129 permits, 38.8 percent are anticipated to actively fish for Northeast multispecies. While these numbers may change, the SHS expects that compared to FY 2009 there would be no change from the consolidation rate that previously occurred under the DAS Leasing Program or the consolidation rate that may take place in the Common Pool in FY 2010.

The member permits that are not attached to active Northeast multispecies vessels in FY 2010 are the same permits that leased out their DAS allocations in FY 2009. In most cases, a member who owns multiple permits fished the DAS allocations of all those permits on a single hull and would now continue to fish the ACE contributed by all those permits on the same single hull, resulting in no additional consolidation.

Redirection of Effort

If CPUE among SHS vessels increases, some Sector vessels that historically fished for Northeast multispecies may redirect fishing effort to another fishery. Fishing effort could be redirected using different gear types and/or redirected into different fishing areas, or the fleet composition could change.

Effort shifts may result in increased competition among fishermen, increased catch levels of certain stocks, and changing revenue streams.

However, the SHS anticipates that vessels would not switch fishing efforts into other fisheries. It is the intent of the members to continue their historical participation in the monkfish, herring, mackerel, skate, dogfish, squid, whiting, and shrimp fisheries for which they possess federal or state permits. Thus, there would be negligible impacts to members and ports due to redirection.

Increased Precision in Mortality Control

By agreeing to fish under an ACE, sector members are making a legally binding commitment to directly comply with measures designed to be consistent with NMFS' annual determination of allowable fishing mortality. Moreover, sector members would be granted increased flexibility that should provide incentive for sector fishermen to more fully exploit previously under-exploited stocks. As such, the actual stock-specific sector catch should be fairly consistent with stock-specific levels of allowable fishing mortality as determined by NMFS. In contrast, the incentive among Common Pool vessels is to maximize revenue as constrained by DAS, input control regulation, market prices, and at-sea conditions. Because NMFS has a limited ability to predict market and at-sea conditions, their ability to identify a set of DAS limits and input controls that simultaneously results in the optimal harvest of multiple stocks is limited. At the end of any fishing year, Common Pool vessels may have fishing mortality considerably higher or lower than the stock-specific allowable fishing mortality. Because fisherman in sectors may vary their fishing behavior at will, they may match behavior to actual conditions resulting in higher economic return while staying consistent with the FMP. The more precise regulation of stock-specific catch levels under Sector operation would be beneficial to the vessels, ports, and Northeast multispecies fishery.

Amendment 16 – Universal Exemptions

Universal exemptions would be granted to all sector participants upon adoption of Amendment 16 to the Northeast Multispecies FMP. The general effects of sector formation given these universal exemptions are analyzed in Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a). The effects of specific universal exemptions are summarized below.

No Days-At-Sea Needed when Groundfishing

The purpose of Northeast multispecies DAS accounting is to control groundfish mortality by limiting fishing effort to a set number of days per groundfish vessel. Since SHS members would be operating under an ACE that clearly defines the maximum amount of each groundfish stock that could be caught, it is no longer necessary to apply DAS to this group of fishermen to control groundfish mortality. The increased flexibility afforded by this universal exemption is likely to increase revenues, allow fishermen to more fully exploit previously under-exploited stocks, and reduce incentive to fish in unsafe conditions resulting in a positive effect on both Sector participants and ports.

No Trip Limits

This universal exemption allows Sector participants the flexibility to extend fishing efforts to realize a higher return on those efforts during high harvest periods. This increased flexibility is likely to increase revenues, allow fishermen to more fully exploit previously under-exploited stocks, and reduce incentive to fish in unsafe conditions resulting in a positive effect on both Sector participants and ports.

Seasonal Closed Area on Georges Bank in May

The primary intent of excluding groundfishing vessels from Georges Bank in May has been to reduce cod catch; the closure has also served to reduce fishing activity on cod spawning aggregations. However, vessels not actively targeting allocated target stocks are still allowed on Georges Bank in May to fish for other fisheries, so disturbance to cod spawning aggregations is not completely avoided.

This exemption would allow sector vessels to actively pursue groundfish in Georges Bank in May, which may reduce pressure on other fisheries and may allow vessels to more fully exploit previously under-exploited stocks. In addition the universal exemption should increase CPUE resulting in increased vessel profits, likely positive effects on sector participants, and positive effects on ports.

Gulf of Maine Closures

The primary intent of excluding groundfishing vessels from the Gulf of Maine in the spring and fall has been to reduce cod catch; the closure has also served to reduce fishing activity on cod spawning aggregations. However, vessels not actively targeting groundfish but fishing for other species are still allowed in the GOM closure areas in May, so disturbance to cod spawning aggregations is not completely avoided.

Allowing sector vessels increased access to the GOM fishing grounds during spring and fall should increase CPUE and may allow vessels to more fully exploit previously under-exploited stocks. It also provides sector vessels access during a time when few grounds are open leading to increased opportunities. This would in turn lead to increased vessel profits likely resulting in a positive effect on both sector participants and ports. However, if the threshold of harbor porpoise take is exceeded, closures may be triggered for all groundfish vessels (i.e., Common Pool and sectors alike).

Six-inch Cod-end Exemption on Georges Bank if using Haddock Separator or Ruhle Trawl

Exempting sector vessels from the requirement to use a six-inch cod-end when fishing Georges Bank with a Haddock Separator or Ruhle trawl should increase the amount of haddock caught per unit of trawling effort because both the separator and Ruhle trawls increase the proportion of haddock caught compared to cod. Few impacts are expected to the cod stock. This would increase profit margins and allow fishermen to more fully exploit previously under-exploited stocks resulting in a positive effect on both Sector participants and ports.

Operations Plan under the Proposed Action

Each sector Operations Plan is unique. However, the harvest rule for all sector Operations Plans tend to fall into one of four broad categories: quota management, monitoring, administrative, and gear restriction. In addition, harvest rules within each category tend to have similar impacts.

Section 3.1 provides a description of the harvest rules of the SHS Operations Plan. The summary category for each of these harvest rules and their likely impacts are provided in Table 5.1.5-1.

TABLE 5.1.5-1
Sustainable Harvest Sector Harvest Rules Summary for Human Communities

Summary Category	Harvest Rules Assigned to the Summary Category	Impacts
Quota Management	▪ Aggregate Allocation ▪ Full Retention of Legal Sized Fish ▪ Data Reconciliation ▪ Sector Call in ▪ Hot Spot Reporting ▪ Discard Rate	Harvest rules assigned to this category relate to actions that would ensure a Sector's ACE is not exceeded. These harvest rules allow Sector participants' the flexibility to time fishing efforts to correspond with optimal market and or environmental conditions. This increased flexibility is likely to increase revenues, allow fishermen to more fully exploit previously under-exploited stocks, and reduce incentive to fish in unsafe conditions. This would result in a positive effect on both Sector participants and ports.
Monitoring	▪ Dockside Monitoring	In the longer term, these harvest rules will provide a better understanding of discard rates that will reduce under-fishing of some stocks. The result would be a positive impact on both Sector participants and ports.
Administrative	▪ Days at Sea (DAS) ▪ DAS Pooling	These harvest rules shift the burden of reporting from individual Sector members to the Sector Manager. This represents a positive impact on Sector members and a negligible impact to ports.
Gear Restriction	▪ Haul Gillnets Once Every 7 Days ▪ Seasonal or Area Gear Restrictions	These restrictions would have negligible impacts to human communities because they are intended to ensure universal exemptions do not result in new negative impacts. In addition, there is no soak time limit for the Common Pool and this rule is designed to mitigate potential conflicts arising from "holding" prime fishing grounds.

Sustainable Harvest Sector-Requested Exemptions

In addition to the universal exemptions for all sectors under Amendment 16, the SHS has requested multiple exemptions to rules that apply to the Northeast multispecies fishery. The potential social and economic impacts of each exemption are individually assessed relative to the Sector vessels and the fishing community in this section.

1) Exemption from the 20-day spawning block out of the fishery required for all vessels

The 20-day block rule was imposed as a means of controlling mortality by reducing fishing effort and to avoid disruption of spawning activity. Because SHS members would operate under an ACE, an exemption would increase the operational flexibility of Sector vessels while maintaining the mortality control rationale for the measure. This would increase the expected profit margins of SHS fishermen and would represent a low positive impact on SHS participants and ports relative to the Common Pool.

2) Exemption from the 120-day block out of the fishery for gillnet vessels

The 120-day block rule was imposed as a means of controlling mortality by reducing gillnetting effort. Because SHS members would operate under an ACE, an exemption would increase the

operational flexibility of Sector vessels while maintaining the mortality control rationale for the measure. This would increase the expected profit margins of SHS fishermen and would represent a low positive impact on SHS participants and ports relative to the Common Pool.

3) Exemption from the limit on the number of gillnets imposed on the Day gillnet category, but not to exceed 150 nets per permit

The existing gillnet number restriction was implemented to reduce fishing effort and fishing mortality. It also had the effect of reducing the potential that gear would be left untended to "hold" fishing ground. The agreement of the SHS to fish under an ACE provides conservation benefits comparable to the overall effort reduction and mortality control rationale for these measures. However, exempting SHS vessels from the gillnet measures could result in longer soak times or gear left untended to hold fishing ground. This could increase inter-vessel conflicts.

This exemption would represent a low positive impact to SHS gillnetters but a low negative impact to ports without measures to ensure the exemption would not increase ghost fishing and inter-vessel conflicts.

4) Exemption from the length and horsepower restrictions on DAS leasing

The DAS leasing restrictions were imposed as a means of maintaining the character of the fleet. Exemption for DAS leasing restrictions would defeat this purpose although this is not the intention of the exemption request.

The DAS leasing request is related to retention of monkfish harvested while vessels participate in the multispecies fishery. Among Common Pool participants, groundfish DAS allow a vessel to land and retain an increased quantity of monkfish under some circumstances. While groundfish fishermen operating as part of the SHS would be exempt from DAS regulation, they would still need to expend groundfish DAS to land and retain an increased quantity of monkfish under some circumstances.

The exemption from DAS leasing restrictions would decrease the probability that SHS participants would be forced to discard monkfish when lacking either a groundfish or monkfish DAS. This would, in turn, increase the expected profit margins of SHS fishermen. The increased revenue would represent a low positive impact on SHS participants. While the character of the fleet may change somewhat if SHS is exempted from DAS leasing restrictions, this potentially negative factor is more than offset by the potential for increased vessel profitability, resulting in a low positive effect on ports.

Summary of Direct and Indirect Impacts of the Proposed Action to Human Communities

Experience with the existing Georges Bank Cod Fixed Gear and Hook Sectors, continued receipt of applications for sector development during the development of Amendment 16, assessment of the universal exemptions, and assessment of the sector specific harvest rules and exemption requests all indicate that the Proposed Action would generally have a low positive social and economic impact on both sector participants and ports.

5.1.5.2 No-Action Alternative

Under the No-Action Alternative, these vessels would remain in the Common Pool and would operate under the FY 2010 Common Pool rules. These rules, which include measures designed to re-build groundfish stocks over the near-term by reducing fishing mortality, would likely reduce the revenue of individual fishermen and have negative impacts on communities that rely heavily on the Northeast

multispecies fishery. Those negative impacts may include reduction or possible elimination of vessels from some ports, reduced activity for some shore-based businesses, and reduced economic viability of some piers, wharves, and docks. Such outcomes would diminish the probability that these communities would participate in the fishery once stocks have rebuilt. It is also possible that negative impacts may extend to other regional fishing communities that are less dependent on the groundfish fishery.

5.2 CUMULATIVE EFFECTS ANALYSIS

The need for a cumulative effects analysis (CEA) is referenced in the CEQ regulations implementing NEPA (40 CFR Part 1508.25). CEQ regulations define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action." The purpose of a CEA is to consider the effects of the Proposed Action and the combined effects of many other actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but, rather, the intent is to focus on those effects that are truly meaningful. The CEA baseline in this case consists of the combined effects of the other sectors, and the past, present, and reasonably foreseeable future fishing and non-fishing actions which are described in Sections 5.2.2 through 5.2.4, and summarized in Table 5.2.5-1.

This CEA assesses the combined impact of the direct and indirect effects of this Sector with the impact from the operation of other sectors, and the past, present, and reasonably foreseeable future fishing actions, as well as factors external to the multispecies fishery that affect the physical, biological, and socioeconomic resource components of the groundfish environment. The analysis is focused on the VECs (see below) and compares the impacts of fishing under the Sector (Proposed Action) with the impacts of fishing under the Common Pool (No-Action Alternative) as currently regulated by Amendment 13 to the Northeast Multispecies FMP and subsequent actions. The impacts of Common Pool fishing were previously assessed in the EIS and EAs associated with these actions. At the time this document was written, the proposed rule for Amendment 16 to the Northeast Multispecies FMP had been issued, and the rule-making would be finalized on or before May 1, 2010. The impacts of Common Pool fishing have been addressed in the Final EIS accompanying Amendment 16.

Valued Ecosystem Components (VECs): The CEA focuses on VECs specifically including:

- Physical environment/habitat (including EFH);
- Regulated stocks (allocated target groundfish stocks);
- Non-allocated target species and bycatch;
- Protected resources/endangered species; and
- Human communities (ports of sector operation and sector members).

Temporal and Geographic Scope of the Analysis: The temporal range that will be considered for habitat, allocated target species, non-allocated target species and bycatch, and human communities, extends from 2004, the year that Amendment 13 was implemented, through May 1, 2011, the beginning of the next fishing year. While the effects of actions prior to Amendment 13 are considered (see Amendment 13 for a full cumulative effects analysis), the cumulative effects analysis for this action is focused primarily on Amendment 13 and subsequent actions because Amendment 13 implemented the sector process and included major changes to management of the groundfish fishery, including substantial effort reductions. Much emphasis is placed on the implementation of proposed measures from

Amendment 16, since this action would approve up to 19 additional sectors, revise sector management regulations, and add stricter management measures that apply to the Common Pool.

The temporal range considered for endangered and other protected species begins in the 1990's when NMFS began generating stock assessments for marine mammals and developed recovery plans for sea turtles that inhibit waters of the U.S. EEZ. In terms of future actions, the analysis examines the period of approval for this action through May 1, 2011, which is the beginning of the subsequent fishing year. All sectors have requested approval for one year, and the cumulative effects will need to be reassessed following the implementation of Amendment 16 management measures and operation of sectors.

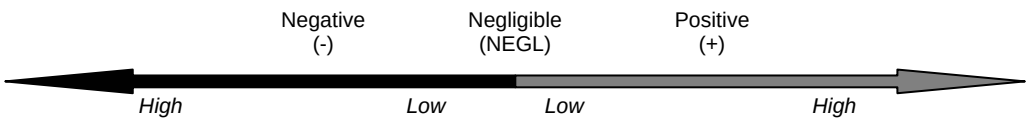
The geographic scope considered for cumulative effects to habitat, allocated target species, and non-allocated target species and bycatch consists of the range of species, primary ports, and geographic areas (habitat) discussed in Section 4.0 (Affected Environment). The range of each endangered and protected species as presented in Section 4.4 will be the geographic scope for that VEC. The geographic scope for the human communities will consist of those primary port communities from which Sector vessels originate.

Impact Category Definitions and Qualifiers: The following definitions and qualifiers are used in the narratives and tables of this CEA:

Impact Definition			
VEC	**Direction**		
	Positive (+)	**Negative (-)**	**Negligible (Negl)**
Habitat	Actions that improve the quality or reduce disturbance of habitat	Actions that degrade the quality or increase disturbance of habitat	Actions that have no positive or negative impact on habitat quality
Allocated Target Species, Non-allocated Target Species & Bycatch, Protected Resources	Actions that increase stock/population health	Actions that decrease stock/population health	Actions that have little or no positive or negative impact on stocks/populations
Human Communities	Actions that increase revenue and social well being of fishermen and/or associated businesses	Actions that decrease revenue and social well being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well-being of fishermen and/or associated businesses.

Impact Qualifiers:	
Low (L; as in low positive or low negative):	To a lesser degree
High (H; as in high positive or high negative):	To a substantial degree
Likely	Some degree of uncertainty associated with the impact
ND	Impacts could not be determined at time of this writing

NEGL = Negligible



5.2.1 Summary of Direct and Indirect Impacts of Proposed Action

The direct and indirect effects on the VECs from the FY 2010 SHS operations (Proposed Action) compared to what the impacts would be if the same vessels operated in the Common Pool (No-Action Alternative) are summarized in Table 5.1-1.

The effects of specific universal exemptions on the physical environment and habitat (including EFH) would generally be negligible or low negative. In addition, the harvest rules for the SHS would also generally have a negligible impact on the physical habitat/EFH since the majority of the harvest rules are not expected to affect the number of gear days fished.

The SHS would fish for allocated target species with a number of gear types: trawl, gillnet, and hook and line gear (including jigs, handline, and non-automated demersal longlines), although trawls would be the primary gear type. As discussed in Section 4.1.6, trawls have relatively high habitat impacts and bottom gillnets and longlines have low impacts (Morgan and Chuenpagdee 2003). Trawls result in a greater impact to the seafloor than fixed gear. However, the Common Pool would also utilize trawl gear and would primarily fish in the same areas as the SHS.

In addition, the SHS would be assigned an ACE for each of the Northeast multispecies stocks, which would require sectors to stop fishing once their ACE has been reached. Figure 5.2.1-1 below indicates the PSC of the permits in the SHS, from which the ACE (in pounds) would be derived. It is expected that use of the universal exemptions, harvest rules, and requested Sector-specific exemptions would tend to increase CPUE that would result in less fishing days and thereby a reduction in impacts to the physical habitat/EFH. However, the ability to target specific stocks would tend to increase gear days and therefore a slight increase in impacts to the physical habitat/EFH. For the purposes of this assessment, it is anticipated that there would be a slight increase in overall gear days. It is expected that a minor increase in gear days would not have a measurable impact on the physical habitat/EFH. For these reasons, under the Proposed Action, SHS operations would generally have an overall negligible impact on the physical environment and habitat (including EFH) relative to the vessels operating under Common Pool requirements.

The SHS requested exemptions are expected to result in a redistribution of fishing effort over the year, the potential to catch a greater proportion of spawning fish, potential increases in mortality of allocated target stocks due to longer soak times, and reduced discards of monkfish. In general, the anticipated effect of SHS formation and operation in FY 2010 is to convert vessel catch into more landing and less discard while not exceeding ACEs as well as the reduction of potential to exceed ACEs through real-time management by the SHS. The overall impact of universal exemptions, Operations Plan requirements and Sector-specific exemptions on allocated target species is expected to be negligible.

It is expected that impacts from SHS operations and requested exemptions on non-allocated target species and bycatch would be directly related to operations conducted for allocated target stocks under allocations controlled by ACEs, and there would be little, if any, increase in impacts to non-allocated target species and bycatch under Sector management relative to the Common Pool. Real time management by SHS is expected to reduce the potential to exceed ACEs and therefore control impacts to non-allocated target species and bycatch. For these reasons, under the Proposed Action, SHS operations would generally have an overall negligible impact on non-allocated target species and bycatch relative to the vessels operating under the Common Pool requirement.

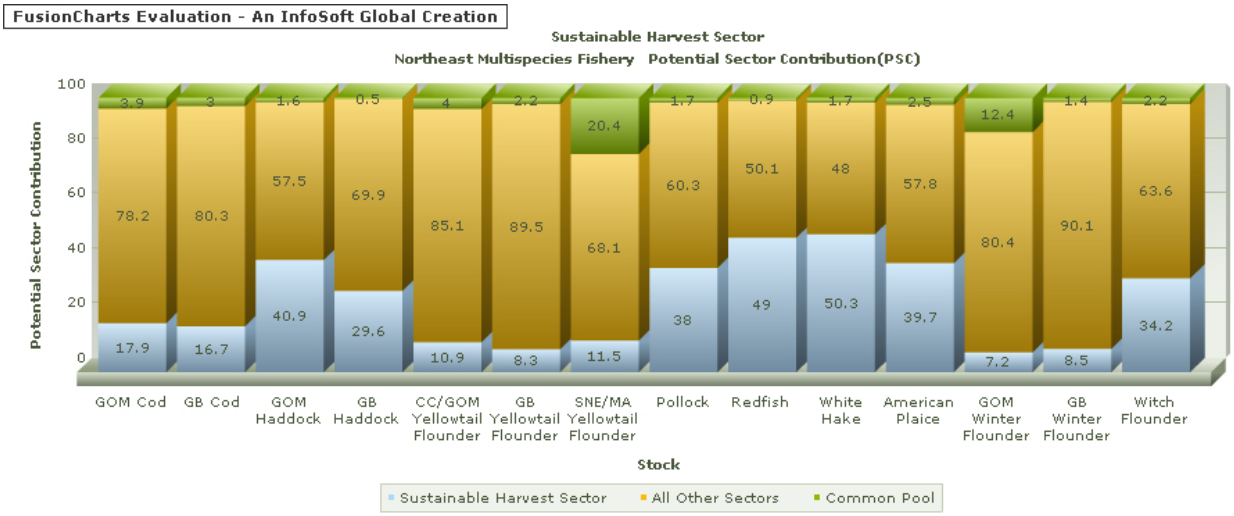
Provisions of Amendment 16 would exempt the SHS from measures that would apply to the Common Pool such as the requirements for DAS limits, trip limits, area closures, and mesh size. These exemptions would generally allow for an increased chance of interactions between Sector vessels and

protected resources due to fishing activities in previously closed areas and an increase in gear days. Although Universal Exemptions would result in positive or negligible impacts to physical habitat/EFH, fish stocks, and human communities, the additive effect of these exemptions on protected resources would likely be low negative. In addition, the SHS's Operations Plan would include multiple harvest rules. These harvest rules are generally administrative and would thereby result in negligible direct impacts to protected resources. Harvest rules that allow for dockside monitoring, however, would result in a low positive indirect impact to protected resources (see Table 5.1.4-1 for justification).

The SHS has requested four exemptions. Three exemptions would have a low negative impact to protected resources as they would likely result in an increase in gear days. The fourth exemption would result in a negligible impact to protected resources as it would not be likely to affect fishing effort. Cumulatively, if the SHS is approved, impacts to protected resources from exemptions granted under Amendment 16, the SHS Operations Plan, and the specific exemptions requested by SHS would likely result in a low negative impact due to a slight increase in gear days.

Experience with the existing Georges Bank Cod Fixed Gear and Hook Sectors, continued receipt of applications for sector formation during the development of Amendment 16, and theoretical considerations all indicate that the Proposed Action would generally have low positive social and economic impacts on SHS participants and ports.

Figure 5.2.1-1 Sustainable Harvest Sector Potential Sector Contribution Compared to all Other Sectors and the Common Pool



5.2.2 Effects from All Other Sectors

In order to estimate the impacts of all sectors, the direct and indirect effects associated with each one must be weighed in context with the entire fleet. The individual sectors' impacts are analyzed in detail in each sector's EA, and are summarized in Table 5.2.2-1. Following Table 5.2.2-1, there are descriptions of each sector, and a brief discussion of the impacts associated with each sector. The aggregate sector impacts include matters that apply to all sectors and must be considered from a cumulative perspective. The impacts from individual sectors, as well as the aggregate impacts from these matters that are common to all sectors are captured in the summary of impacts row in Table 5.2.2-1. The summary of impacts is carried forward to Table 5.2.5-1 to be considered in the final summary of cumulative effects.

5.2.2.1 Individual Sector Impacts

The impacts from each individual sector were analyzed in the corresponding EA. The paragraphs below briefly describe each sector, the proportion of ACL, and the impacts. Detailed discussion of each sector can be found in the corresponding EA.

Northeast Fishery Sector II

Members of this Sector would primarily operate out of the port of Gloucester, Massachusetts, although fish may also be landed in Boston, New Bedford, Provincetown, Falmouth, Newburyport, and Rockport, Massachusetts; and Seabrook and Portsmouth, New Hampshire. The primary gear for NEFS-II would be trawl gear, although a limited amount of gillnets (≤10 percent) may also be utilized. Based on the January 2010 Operations Plan, the NEFS-II would consist of up to 81 permits; however, it is anticipated that 43 active vessels would fish these permits. This Sector's PSC represents 16 to 20 percent of the total ACL for GOM cod, GOM haddock, Cape Cod/GOM yellowtail flounder, redfish, and GOM winter flounder. This Sector's PSC represents 11 to 14 percent of the total ACL for GB haddock, pollock, and witch flounder. PSC's for all other stocks are less than 10 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector III

Members of this Sector would primarily operate out of the port of Gloucester, Massachusetts, although fish may also be landed in Marblehead and New Bedford, Massachusetts; and Point Judith, Rhode Island. The primary gear for NEFS-III would be gillnet, although a limited amount of trawl and longline gear (≤5 percent each) may also be utilized. Based on the January 2010 Operations Plan, NEFS-III would consist of 81 permits; however, it is anticipated that 50 active vessels would fish these permits. This Sector's PSC represents 10 to 17 percent of the total ACL for GOM cod, GOM haddock, and GOM winter flounder. This Sector's PSC represents 5 to 9 percent of the total ACL for Cape Cod/GOM yellowtail flounder, pollock, and white hake. PSC's for all other stocks are less than 5 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources, and low positive impacts to human communities.

TABLE 5.2.2-1
Summary of Direct and Indirect Effects of All Other Sectors

Sector	Description		Physical Environment	Biological Environment			Human Communities	
	# of active vessels (# of permits)	Gear Mix	Physical Habitat (incl. EFH)	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
INDIVIDUAL SECTOR IMPACTS								
NEFS-II	43 *(81)*	>90% trawl; <10%gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-III	50 *(81)*	>90% gillnet; <5% trawl; <5% longline	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-IV	0 *(48)*	Lease-only	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-V	37 *(41)*	>90% trawl; <10% gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-VI	8 *(18)*	>90% trawl; <10% gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-VII	21 *(27)*	>90% trawl; <10% gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-VIII	16 *(22)*	>90% trawl; <10% gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-IX	22 *(51)*	>90% trawl; <10% gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-X	34 *(44)*	>90% trawl; <5% gillnet; <5% longline	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-XI	38 *(48)*	>85% gillnet; <10% trawl; <5% longline/hook	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-XII	4 *(8)*	>90% trawl; <10%gillnet	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
NEFS-XIII	29 *(35)*	90% trawl;10%gill	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)

TABLE 5.2.2-1 (continued)
Summary of Direct and Indirect Effects of All Other Sectors

Sector	Description		Physical Environment	Biological Environment			Human Communities	
	# of active vessels (# of permits)	Gear Mix	Physical Habitat (incl. EFH)	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
INDIVIDUAL SECTOR IMPACTS								
GB Cod Fixed Gear	49 (95)	50%hook; 40%gillnet; 10% longline	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
Port Clyde Community	28 *(43)*	>50% gillnet >40% trawl <5% handline	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
Tri-State	10 *(22)*	Trawl, Gillnet, Longline, Hooks	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
Northeast Coastal Communities	19 *(19)*	1 otter trawl, all others hook gear and/or trap/pot	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)

TABLE 5.2.2-1 (continued)
Summary of Direct and Indirect Effects of All Other Sectors

Sector	Description		Physical Environment	Biological Environment			Human Communities	
	# of active vessels *(# of permits)*	Gear Mix	Physical Habitat (incl. EFH)	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
AGGREGATE SECTOR IMPACTS								
Proportion of ACL			Likely Negl	Negl	Negl	Likely Negl	L(+)	L(+)
Inter-Sector transfer of ACE			Negl	Negl	Negl	Negl	L(+)	L(+)
Consolidation of Permits			Negl	Negl	Negl	Negl	Negl	Negl
Redistribution of Effort			Negl	Negl	Negl	Negl	Negl	Negl
Monitoring			Negl	L(+)	L(+)	L(+)	L(-)	L(-)
Summary of Impacts			Negl	Negl	Negl	Likely L(-)	L(+)	L(+)

Notes:

1. Individual sector impacts are derived from each sector's EA.

2. EFH = essential fish habitat; NEFS = Northeast Fishery Sector

Northeast Fishery Sector IV

NEFS-IV would be based in Gloucester, Massachusetts and would be a lease only sector, which means there would be no active vessels fishing these permits. Based on the January 2010 Operations Plan, the NEFS-IV would consist of up to 48 permits, which are held by 3 permit owners, including the Gloucester Fishing Community Preservation Fund. While it is anticipated that the majority of the quota held by these permit holders would be available to sector vessels operating out of Gloucester, specifically NEFS-II and NEFS-III, the quota may be leased to other sectors as needed, depending on market conditions. NEFS-II would primarily utilize trawl gear, with limited use of gillnets and NEFS-III would primarily utilize gillnets, and to a limited extent, trawl and hook gear. This Sector's PSC represents less than 10 percent of the total ACL for all multispecies stocks; the stocks for which this sector would have the most ACE are GOM cod, American plaice, and witch flounder (each approximately 9 percent of the total ACL). It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector V

Members of this Sector would land their catch primarily in the ports of Point Judith and Newport, Rhode Island; New Bedford, Massachusetts; and Montauk, New York. Secondary ports may include Belford, Cape May, and Point Pleasant, New Jersey; Boston, Gloucester, and Woods Hole, Massachusetts; Greenport, Hampton Bay, and Shinecock, New York; and Stonington, Connecticut. The primary gear for this Sector would be trawl, although a limited amount (≤10 percent) of gillnet gear may also be utilized. Based on the January 2010 Operations Plan, the NEFS-V would consist of 41 permits; however, it is anticipated that 37 active vessels would fish these permits. This Sector's PSC represents 16 percent of the total ACL for SNE/MA yellowtail flounder. This Sector's PSC represents 10 percent of the total ACL for GB yellowtail flounder and 6 percent of the total ACL for GB haddock. PSC's for all other stocks are approximately 3 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector VI

Members of this Sector would land their catch in the ports of Boston, Gloucester, and New Bedford, Massachusetts; however, Hyannis, Massachusetts may also be used. The primary gear for the NEFS-VI would be trawl, and some vessels (≤10 percent) may periodically use gillnets. Based on the January 2010 Operations Plan, the NEFS-VI would consist of 18 permits; however, it is anticipated that only 8 active vessels would fish these permits. This Sector's PSC represents approximately 4 to 6 percent of the total ACL for SNE/MA yellowtail flounder, redfish, and witch flounder. PSC's for all other stocks are less than 4 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector VII

Members of this Sector would primarily land their catch in New Bedford, although Chatham, Fall River, Gloucester, and Provincetown, Massachusetts; Portland Harbor, Maine; and Montauk, New York would be secondary landing ports. The primary gear for NEFS-VII would be trawl gear (90 percent or more), although a limited amount of gillnet gear (≤10 percent) could also be utilized. Based on the January 2010 Operations Plan, the NEFS-VII would consist of 27 permits; however, it is anticipated that 21 active vessels would fish these permits. This Sector's PSC represents 17 percent of the total ACL for GB winter flounder, and 16 percent of the total ACL for GB yellowtail flounder. This Sector's PSC represents between 3 and 6 percent of the total ACL for GB cod, GB haddock, Cape Cod/GOM yellowtail flounder, SNE/MA yellowtail flounder, American plaice, GOM winter flounder, and witch flounder. PSC's for all other stocks are less than 1 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector VIII

Members of this Sector would primarily land their catch in New Bedford, Massachusetts, although Point Judith, Rhode Island and Provincetown, Massachusetts would be secondary ports. The primary gear for NEFS-VIII would be trawl gear, although a limited amount of gillnets (≤10 percent) may also be utilized. Based on the January 2010 Operations Plan, the NEFS-VIII would consist of up to 22 permits; however, it is anticipated that only 16 active vessels would fish these permits. This Sector's PSC represents 21 percent of the total ACL for GB winter flounder, and 16 percent of the total ACL for GB yellowtail flounder. This Sector's PSC represents approximately 6 to 8 percent of the total ACL for GB cod, GB haddock, Cape Cod/GOM yellowtail flounder, and SNE/MA yellowtail flounder. PSC's for all other stocks are 4 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector IX

Members of this Sector would primarily land their catch in New Bedford, Massachusetts, and secondary ports would include Provincetown, Massachusetts and Point Judith and Newport, Rhode Island. The primary gear for NEFS-IX would be trawl gear, although a limited amount of gillnets (≤10 percent) may also be utilized. Based on the January 2010 Operations Plan, the NEFS-IX would consist of 51 permits; however, it is anticipated that only 22 active vessels would fish these permits. This Sector's PSC represents 34 percent of the total ACL for GB winter flounder, 19 percent of the total ACL for GB yellowtail flounder, and 13 percent of the total ACL for GB cod. PSC's for all other stocks are approximately 10 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector X

Members of this Sector would primarily land their catch in the ports of Green Harbor, Marshfield, Provincetown, Scituate, North River, Plymouth, Sandwich, Brant Rock, and Gloucester, Massachusetts. Secondary land ports include Chatham, Hyannis, New Bedford, Woods Hole, and Falmouth, Massachusetts. The primary gear for this Sector would be trawl gear, although some permits (≤5 percent) would be for gillnets and longlines (≤5 percent). Based on the January 2010 Operations Plan, the NEFS-X would consist of 44 permits; however, it is anticipated that 34 active vessels would fish these permits. This Sector's PSC represents 16 percent of the total ACL for GOM winter flounder, 12 percent of the total ACL for Cape Cod/GOM yellowtail flounder, and 5 percent of the total ACL for GOM cod. PSC's for all other stocks are 3 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector XI

Members of this Sector would land their catch primarily in Gloucester, Hampton, and Newburyport, Massachusetts; Portland Harbor, Maine; and Rye, Hampton, Portsmouth and Seabrook, New Hampshire. In addition, they may land in York, Maine and New Bedford, Massachusetts. The primary gear for NEFS-XI would be gillnets (≥85 percent) although a limited amount of trawl gear (≤10 percent) and longline or hook gear (≤5 percent) may also be utilized. Based on the January 2010 Operations Plan, the NEFS-XI would consist of up to 48 permits; however, it is anticipated that 38 active vessels would fish these permits. This Sector's PSC represents approximately 14 percent of the total ACL for GOM cod, and 9 percent of the total ACL for pollock. PSC's for all other stocks are 5 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector XII

Members of this Sector would primarily land their catch in Gloucester, Hampton, and Newburyport, Massachusetts; Portland Harbor, Maine; and Rye, Portsmouth and Seabrook, New Hampshire. In addition, they may land in York, Maine and New Bedford, Massachusetts. The primary gear for this Sector would be trawl gear, although a limited amount of gillnets (≤10 percent) may also be utilized. Based on the January 2010 Operations Plan, the NEFS-XII would consist of up to 8 permits; however, it is anticipated that 4 active vessels would fish these permits. This Sector's PSC represents 1.3 percent of the total ACL for GOM cod; PSC's for all other stocks are less than 0.6 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Fishery Sector XIII

Members of this Sector would primarily land their catch in New Bedford, Massachusetts and Point Judith, Rhode Island. Secondary landing ports include Provincetown, Boston, and Gloucester, Massachusetts; Stonington, Connecticut; and Greenport, New York. The gear utilized by NEFS-XIII would be composed of approximately 90 percent trawl gear and 10 percent gillnet gear. Based on the January 2010 Operations Plan, the NEFS-XIII would consist of 35 permits; however, it is anticipated that 29 active vessels would fish these permits. This Sector's PSC represents 14 to 16 percent of the total ACL for GB yellowtail flounder and GB haddock, 10 to 12 percent of the total ACL for GB winter flounder and SNE/MA yellowtail flounder and 8 percent of the total ACL for GB cod. PSC's for all other stocks are less than 5 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Georges Bank Cod Fixed Gear Sector

Members of this Sector primarily operate out of the ports of Allen's Harbor, Aunt Lydia's Cove, Saquatucket Harbor, and Stage Harbor, Massachusetts. The primary gear for this Sector would be fixed gear, specifically hook-and-line gear (jigs and longlines) and sink gillnets. Based on the January 2010 Operations Plan, the Fixed Gear Sector would consist of 95 permits; however, it is anticipated that 49 active vessels would fish these permits. This Sector's PSC represents 28 percent of the total ACL for GB cod. PSC's for all other stocks are 8 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH and allocated target species, non-allocated target species and bycatch, likely low negative impacts to protected resources, and low positive impacts to human communities.

Port Clyde Community Sector

Members of this Sector would homeport and/or land their catch in Gloucester, Massachusetts, or one of several Maine ports, including Portland Harbor, Boothbay Harbor, Cape Porpoise, Cundy's Harbor, Kennebunkport, Monhegan Island, Port Clyde, Sacco, and Sebasco Harbor. Based on the January 2010 Operations Plan, the Port Clyde Community Sector would consist of up to 43 permits; however, it is anticipated that 28 (and up to 35) active vessels would fish these permits. Over one-half of the active vessels would use sink gillnets as their primary gear and just under one-half would primarily use demersal (otter) trawls. One vessel (<5 percent) would also use handlines. This Sector's PSC represents 6 percent of the total ACL for American plaice, and roughly 4 to 5 percent of the total ACL for GOM cod, pollock, white hake, and witch flounder. PSC's for all other stocks are 3 percent or less of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Tri-State Sector

Members of this Sector would operate out of Beverly, Chatham, Gloucester, Harwichport, New Bedford, Provincetown, Salem and Scituate, Massachusetts. The primary gear type in this Sector would

be trawl gear, although gillnets and hook-and-line gear would be used as well. Based on the January 2010 Operations Plan, the Tri-State Sector would consist of 22 permits; however, it is anticipated that 10 active vessels would fish these permits. This Sector's PSC represents roughly 7 percent of the total ACL for GB yellowtail flounder and 3 percent of the total ACL for GOM winter flounder. PSC's for all other stocks are less than 2 percent of the amount permitted for harvest by the fleet. Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

Northeast Coastal Communities Sector

Members of this Sector would homeport and/or land their catch in one of several ports in Maine and Massachusetts. Primary landing ports would include Beal's Island, Jonesport, Port Clyde, Southwest Harbor, Stonington, and Winter Harbor, Maine; and Menemsha, New Bedford, Oak Bluffs, Sandwich, and Vineyard Harbor, Massachusetts. Secondary ports would include Buck's Harbor, Eastport, Mantinicus, Northeast Harbor, and Swan's Island, Maine; and Gloucester and Provincetown, Massachusetts. The primary gear for this Sector would be longline, trawls, and traps/pots. Based on the January 2010 Operations Plan, the Northeast Coastal Communities Sector would consist of 19 permits, fished by 19 active vessels. PSC's for stocks are less than 1 percent of the amount permitted for harvest by the fleet; however, the stocks for which the allocation is highest is white hake (0.009 percent)and GB yellowtail flounder (0.008 percent). Impacts associated with this Sector's operation reflect consideration of universal exemptions, Sector harvest rules, and Sector-specific exemptions. It is anticipated that this Sector's operation would result in negligible impacts to the physical environment/habitat/EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to human communities.

5.2.2.2 Aggregate Sector Impacts

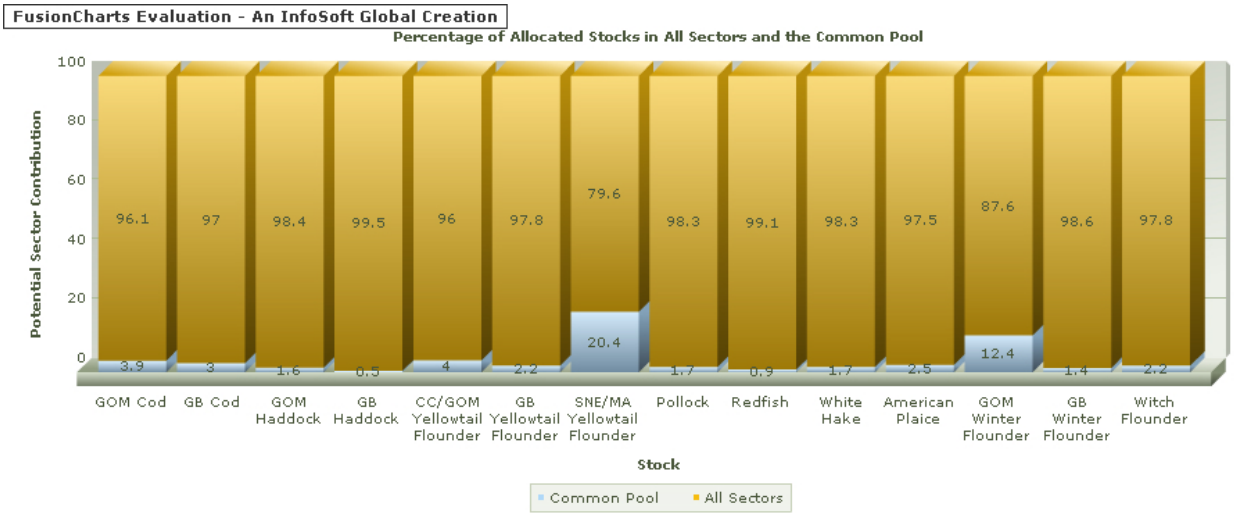
The sector-specific harvest rules, universal exemptions granted by Amendment 16, Sector-specific harvest rules, and additional requested Sector-specific exemptions have been discussed in Section 5.1 and incorporated into the Sector-specific impacts represented in Table 5.2.2-1. While the direct and indirect effects of additional exemptions have been incorporated into individual sector impacts above, it is important to look at the potential aggregate impacts of allowing these exemptions to go forward. In aggregate, the requested exemptions would have or would likely have negligible impacts on habitat/EFH, allocated target species, and non-allocated target species and bycatch. By design, all requested exemptions would have low positive effects to sector members and usually ports. Several of the Amendment 16 universal exemptions may result in an increased potential for gear interactions with protected resources, possibly resulting in low negative impacts as discussed in Section 5.1.4 of each sector's EA. In addition, several sectors with gillnet vessels requested exemptions from gillnet-related restrictions. This may result in an increased number of nets or time the nets would be in the water. Based on the reported gear mix and number of active vessels in the January 2010 Operations Plans and associated EAs, roughly half the gillnet vessels in the commercial multispecies fleet would be operating under sector rules (i.e., exemptions, harvest rules, ACE, etc.). Many of these sector gillnet vessels would be exempted from the 120-day gillnet block, if approved. When compared to the No-Action Alternative (i.e., if these gillnet vessels were operating under Common Pool rules), there would be more gear days under the Proposed Action(s), resulting in low negative impacts to protected resources.

Additionally, there are matters that are related to general sector operations, and are considered in aggregate below and also summarized in Table 5.2.2-1 above.

Proportion of ACL

The total amount of groundfish that is permitted to be caught by the commercial multispecies fleet is called the ACL. FY 2010 is the first year in which ACLs have been set for most stocks, in order to be in compliance with revisions to the Magnuson-Stevens Act in 2006. Proposed management measures in Amendment 16 to the Northeast Multispecies FMP have been set to reduce exploitation rates of managed stocks by roughly 40 to 60 percent (Table 4 of Amendment 16) from FY 2008 in order to achieve the ACLs for the multispecies stocks. AMs have been put into place to ensure that fishing by the Common Pool does not exceed the ACL. Based on the sector rosters which were submitted January 2010, approximately half the permits in the Northeast multispecies fishery would be enrolled in sectors, while the other half would remain in the Common Pool. The proportion of ACL that is linked to the permits enrolled in sectors (i.e., potential sector contribution) would be more than 90 percent for all Northeast groundfish stocks, with the exception of SNE/MA yellowtail flounder (more than 70 percent in sectors) and GOM winter flounder (more than 80 percent in sectors). The ACE for each sector is determined by multiplying the summed PSC of all members by the overall ACL for each stock. The proportion of ACLs in sectors and the Common Pool is illustrated in Figure 5.2.2-1. The potential impacts of the proportion of ACL in sectors is negligible or likely to be negligible to physical environment/EFH, allocated target stocks, non-allocated target species and bycatch , and protected resources, since there would likely be little potential for change in the potential amount of catch, which would be controlled by ACEs for each sector. However, the catch may increase for abundant stocks such as haddock because of the increased flexibility to selectively target these stocks with gear specifically designed for this purpose. Sector participants would likely benefit from the ability to fish their ACE, which represents the majority of the ACL for the fleet, without effort control restrictions. This would in turn, result in low positive impacts to the sectors' ports.

Figure 5.2.2-1 Percentage of Allocated Target Stocks in All Sectors and the Common Pool



Inter-Sector Transfer of ACE

Inter-sector transfer of ACE is discussed in Amendment 16 to the Northeast Multispecies FMP (Sections 4.2.3.7, 5.2.3.7, and 7.2.1.2.3.4), which would allow sectors to adjust allocations "to account for unusual circumstances or to take advantage of other opportunities." These ACE transfers may occur during the fishing year and up to two weeks after the end of the fishing year in order to "provide[s] a limited opportunity for a sector to quota balance in the instances that ACE was inadvertently exceeded.

This provision is not intended to allow sectors to exceed their ACE." These provisions do not provide for the permanent transfer of sector shares, but allow sectors to avoid inadvertent overages and avoid potential enforcement action or penalties if ACE is exceeded. The ability to transfer ACE within an allotment period results in a net increase of zero, having no impact on achieving target mortality rates. In addition, this provision provides a disincentive to discard catches that may exceed the ACE, and the ability to carry-over ACE into the following fishing year discourages fishing right up to the maximum amount allowed (Sanchirico et al. 2006). This provision would have a low positive impact on human communities because it would allow some flexibility in covering inadvertent overages of a sector's ACE and provides an option to avoid enforcement actions and/or penalties, and greater utilization of allocations, resulting in more landings. The impacts to the physical and biological environments are likely negligible, since this provision would allow for minor deviations from a sector's given ACE.

Consolidation of Permits

Most sectors have indicated that some of their sector members would not actively fish. Of the 812 individual permits currently enrolled in a sector, 465 of those permits are linked to "active" vessels that would fish. While it initially appears that fewer vessels would be fishing as a result of sectors, many of these permits/vessels were previously inactive because of the DAS Leasing Program. In FY 2004, Amendment 13 brought the opportunity for fleet consolidation through the implementation of the DAS Leasing Program and, to a lesser extent, from the DAS Transfer Program. Accordingly, additional fleet-wide consolidation would take place only to the extent that additional consolidation occurs beyond that which resulted from the leasing/transfer programs in past years or would happen under those programs in FY 2010.

The severities of social implications that result from sectors are difficult to predict. Because members currently enrolled in sectors are still able to withdraw to the Common Pool through April 30, 2010, the exact consolidation cannot be predicted. Depending on the fleet composition of the sectors and the distribution of ACE amongst sectors, it is possible that specific gear types or geographic regions could be disproportionately impacted. However, sectors predict that there would be no further consolidation of permits as a result of sector operations. Because sectors claim that there would be no further consolidation of permits as a result of sector operations, it is anticipated that there would be negligible impacts to all VECs associated with consolidation of permits.

Redistribution of Effort

On a related note, expansion of sectors may result in some fishing effort being redistributed from the Northeast multispecies fishery into other fisheries due to improved fishing efficiency, selectivity, or consolidation among vessels that historically fished for Northeast multispecies. Under this scenario, it is possible that fishing effort could be redistributed amongst different gear types and/or different fishing areas, or that the fleet composition could change. It is likely that effort would shift towards fisheries that are managed under effort controls, or are less regulated and/or less competitive, or into fisheries that are not overfished or undergoing overfishing. Two examples to illustrate these scenarios are provided:

- If gillnetters are able to successfully target haddock, an increase in gillnet effort may result because of the abundance of haddock and the replacement of broad effort controls with stock-specific mortality controls.
- Vessels within sectors that also have lobster permits could decide to lease their multispecies quota to larger vessels and instead target American lobster stocks with gear not capable of catching Northeast multispecies.

It is difficult to predict how the social, economic, and biological impacts of effort shifts caused by sectors would compare to, or interact with, the social, economic, and biological impacts of effort shifts from the increased effort controls on the Common Pool under Amendment 16. The opportunity for this type of effort redistribution has existed since implementation of the DAS Leasing/Transfer Program was implemented in Amendment 13 (as described in Section 3.4.7 of that document). Accordingly, additional redistribution of effort is likely only to the extent that additional consolidation occurs beyond that which resulted from the DAS Leasing Programs. In other words, it is likely that higher rates of consolidation would lead to a greater redistribution of effort. How much effort is redistributed by individuals enrolled in a sector compared to what is anticipated within the Common Pool is difficult to predict. Sectors predict that there would be no additional consolidation of permits as a result of sector operations, and consequently there would be no redistribution of effort. Based on this prediction, it is anticipated that there would be negligible impacts to all VECs associated with redistribution of effort.

Monitoring

Because the primary control to regulate fishing by sectors would be the ACE for each stock, sectors must monitor landings to ensure that the sector allocation is not exceeded. Sectors must comply with the new system of at-sea and dockside catch monitoring, which provide information on both landings and discards. Since the majority of the allowed catch for the fishery would belong to sectors, a greater proportion of the groundfish stocks would be monitored. More monitoring data would be generated, covering a larger percentage of the groundfish stocks, which would be a positive contribution for stock assessments and future regulation that rely on these assessments. Allocated target stocks, non-allocated target species and bycatch, and protected resources would experience a low positive cumulative impact since additional monitoring would provide information for more effective management of the fishery and a better understanding of interactions between fisheries and protected species. There would be a negligible effect on habitat, and a low negative impact on human communities due to the increased monitoring and enforcement costs.

5.2.2.3 Summary of Impacts from Sector Operations

Overall, the cumulative impacts associated with all other sector operations (except the SHS) are as follows: negligible impacts to physical environment/habitat and EFH, allocated target species, and non-allocated target species and bycatch; likely low negative impacts to protected resources; and low positive impacts to the human communities.

5.2.3 Other Fishing Effects: Past, Present and Reasonably Foreseeable Future Groundfish and Related Management Actions

Table 5.2.3-1 is a summary of the past, present, and reasonably foreseeable future fishing actions and effects, with the exception of anticipated effects from the operations of the other sectors, which are described in Section 5.2.2 and outlined in Table 5.2.3-1. The impact assessment terms (i.e., positive, negative, negligible) are for the impacts associated with the action on the VECs discussed in Section 4. Specifically, the VECs include: the physical environment and habitat; allocated target species; non-allocated target species and bycatch; protected resources such as marine mammals and sea turtles; and the human communities of ports as well as the Sector participants.

TABLE 5.2.3-1
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Past and Present Fishing Actions						
Amendment 13 (2004) – Implemented requirements for stock rebuilding plans and dramatically cut fishing effort on groundfish stocks. Implemented the process for creating sectors and established the Georges Bank Cod Hook Gear Sector	L(+) Reductions in fishing effort expected to reduce contact time and aerial extent of fishing gear on Essential Fish Habitat	H(+) Fishery Management Plan action further addresses overfished and overfishing status of allocated target species by reducing mortality through additional effort reductions.	(+) Reduction in fishing effort results in reduction of bycatch for many species. Reduced fishing effort also reduces mortality on other non-allocated target species.	L(+) Further reductions in fishing effort via Days-at-Sea cuts when combined with previously established Closed Areas reduce the potential for gear interactions	H(-) short-term, L(+) long-term. Regulations negatively impacted fishing communities in the short-term Reductions expected to lead to more robust stocks in the long-term	H(+) Created sectors and increased efficiency of Sector members, decreased overhead costs. Community initiative resulted in conservation effort.
FW 40A (2004) – allowed additional fishing on Georges Bank haddock for Sector and non-Sector hook gear vessels, created the Georges Bank haddock Special Access Pilot Program, and created flexibility by allowing vessels to fish inside and outside the United States/Canada Area on the same trip	Negl Due to limited impact of hook gear	L(-) Increased mortality, for Georges Bank haddock Designed not to compromise Amendment 13 mortality objectives	L(-) Increased effort results in slight incidental mortality Incidental catch minimized by time/area/bait type limitations.	Negl Gear interactions not expected to increase in any significant way	(+) Provided increased revenue to homeports of hook vessels Enhanced importance of industry involvement	(+) Increased revenue to Hook Sector members NEGL For non-hook vessels or non-Sector members Participation in collaborative research that brought about sustainable fishing opportunities

TABLE 5.2.3-1 (continued)
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Past and Present Fishing Actions						
FW40B (2005) – Allowed Hook Sector members to use Georges Bank cod landings caught while using a different gear during the landings history qualification period to count toward the share of Georges Bank cod that will be allocated to the Sector, revised Days-at-Sea leasing and transfer programs, modified provisions for the Closed Area II yellowtail flounder SAP, established a Days-at-Sea credit for vessels standing by an entangled whale, implemented new notification requirements for Category I herring vessels, and removed the net limit for trip gillnet vessels.	Negl – L(+) Potential for decreased impacts because a larger portion of the Georges Bank cod stock will be taken with hook gear which has been shown to have negligible impacts to habitat	L(-) Short-term increase in effort; minor increase in mortality on Georges Bank haddock; not expected to threaten Amendment 13 mortality objectives.	L(-) Increased effort results in slight incidental mortality. Incidental catch minimized by time/area/bait type limitations	Negl	L(+) Minor benefits gained through relaxed leasing and transfer rules and improvements to the management of the yellowtail flounder SAP that were intended to reduce derby fishing conditions	L(+) Minor benefits gained through increased revenues resulting from a greater allocation of the Georges Bank cod total allowable catch based on historical catch landings with gear other than hook gear. Increased revenue due to the removal of gillnet limits on trip vessels.

TABLE 5.2.3-1 (continued)
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Past and Present Fishing Actions						
FW41 (2005) – Allowed for participation in the Hook Gear Haddock SAP by non-Sector vessels	Negl	Negl Extended access to Haddock SAP for non-Sector vessels which encourages effort on Georges Bank haddock, a healthy stock, and thus away from stocks of greater concern.	Negl – L (-) Allows for a small overall effort increase which could allow for higher bycatch/discard rates	Negl	L(+) Provided non-Hook Sector community members the opportunity to participate in the Haddock SAP, but capped SAP effort	L (-) Economic benefits to sectors would be less than non-Sector participants because the incidental cod catch limit for sectors is smaller than it is for non-sector vessels.
FW42 (2006) – Implemented further reductions in fishing effort based upon stock assessment data and stock rebuilding needs, implemented Georges Bank Cod Fixed Gear Sector	L(+) Effort reductions may have positive impacts due to less bottom time	(+) Implemented further reductions in fishing mortality for groundfish species, put further catch limits on Georges Bank cod	(+) Reduced mortality on target species through effort reductions results in a reduced rate of bycatch/ discards	L(+) Further effort reductions likely resulted in lower risks of gear interaction	(-) short-term, L(+) long-term Disproportionate effects on these groundfish-dependent ports. Long-term benefits from reduced mortality	(+) Allowed additional gear type to gain the efficiencies and other benefits of Sector membership.

TABLE 5.2.3-1 (continued)
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Past and Present Fishing Actions						
Atlantic Large Whale Take Reduction Plan	Negl to L(-) Requires use of sinking groundline, which may sweep bottom. Also potential for "ghost gear" due to weak links in gillnet line	Negl	Negl	(+) Regulations implemented to protect large whales are expected to have a positive impact by reducing incidental takes	L(-) Lobster vessels had to purchase new sinking line	L(-) for gillnetters because weak links must be added to gillnets.
Spiny Dogfish Fishery Management Plan	Negl Catch of dogfish has been incidental to other fisheries, therefore, negligible impact on habitat	L(+) Spiny dogfish stock at or above Bmsy has a low positive effect on target species.	(+) The FMP is designed to rebuild the dogfish stock, considered a non-allocated target species in the multispecies fishery.	Negl	L(-) short-term L(+) long-term In the short-term, revenue from dogfish has been lost, resulting in a low negative impact. However, the Spiny Dogfish FMP is designed to rebuild a sustainable fishery, benefiting the human communities in the long term.	L(-) short-term L(+) long-term In the short-term, revenue from dogfish has been lost, resulting in a low negative impact. However, the Spiny Dogfish FMP is designed to rebuild a sustainable fishery, benefiting Sector members who land dogfish.

TABLE 5.2.3-1 (continued)
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Past and Present Fishing Actions						
Monkfish Fishery Management Plan	L(+) Reduction in fishing effort results in less habitat-gear interaction	(+) Rebuilding measure, reduction in fishing effort means less mortality. FMP was designed to rebuild monkfish stocks, considered to be non- target species and bycatch in this assessment.	(+) Rebuilding measure, reduction in fishing effort means less mortality. FMP was designed to rebuild monkfish stocks, considered to be non-allocated target species and bycatch in this assessment.	(+) Further effort reductions resulted in lower risks of gear interaction	L(-) short-term L(+) long-term Reduction in fishing effort while stock rebuilds means less revenue. Long term benefits due to sustainable fishery.	L(-) short-term L(+) long-term Reduction in fishing effort while stock rebuilds means less revenue. Long term benefits due to sustainable fishery.
Amendment 16 to the Northeast Multispecies FMP Implemented DAS reductions and gear restrictions for the Common Pool, approved formation of additional 17 sectors	Likely (+)	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Reasonably Foreseeable Future Fishing Actions						
Skate Fishery Management Plan and Amendment 3	Likely (+)	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Petition to List the Atlantic wolffish as an Endangered Species	Likely Negl	Likely Negl	Likely Negl	Likely Negl	Likely Negl	Likely Negl

TABLE 5.2.3-1 (continued)
Summary of Effects on VECs from Past, Present, and Reasonably Foreseeable Future FMP and Other Fishery Related Actions with the Exception of Sector Operations

	Physical Impacts	Biological Impacts			Human Community Impacts	
Fishing Actions	**Habitat/EFH**	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Protected Resources**	**Ports**	**Sector Participants**
Reasonably Foreseeable Future Fishing Actions						
Harbor Porpoise Take Reduction Plan (Potential Future Actions)	Likely (+)	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Omnibus Essential Fish Habitat Amendment	Likely (+)	Likely (+)	Likely (+)	Likely Negl	ND	ND
Potential Turtle Excluder Device Requirements for Trawls and Dredges	Likely (-)	Negl	Non-allocated target species: TBD Likely (+) for bycatch	Likely (+)	Likely L(-)	Likely (-) for trawlers
Amendment 5 to the Monkfish FMP	Likely L(+)	Likely (+)	Likely (+)	Likely (+)	L(-)	L(-)
Framework 44 to the Northeast Multispecies FMP Would set ACLs, establish TACs for transboundary U.S./CA stocks, and possibly make adjustments to trip limits/DAS measures	Likely (+)	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Summary of Impacts	**(+)**	**(+)**	**(+)**	**(+)**	**(-)**	**(-)**

5.2.3.1 Physical Environment/Habitat/EFH

The analysis of past, present, and reasonably foreseeable future fishing actions that affect habitat in the region in which the SHS would operate is limited to the area described in Section 3.1.1.

Past, Present Actions: Amendment 13 and FW 42 are regulations that have reduced fishing effort. Amendment 16 would also reduce fishing effort. Reduction in fishing effort results in less gear interaction with bottom habitat, effectively resulting in low positive effects to the physical environment. Other management actions that do not increase or decrease gear interaction with habitat have a negligible effect on habitat. FW 40B was implemented in 2005 and allowed previously non-hook vessels to join the Georges Bank Cod Hook Sector, which resulted in more cod caught with hook gear. This action had a negligible to low positive effect on habitat because hook gear has minimal impacts to bottom habitat.

The ALWTRP requires the use of sinking groundlines, which may have a negligible to low negative impact on habitat due to associated bottom sweep by the groundline. In addition, required use of weak links in gillnets may result in floating "ghost gear," which could snag on and damage bottom habitat.

Because one of the primary bycatch species in the Northeast multispecies fishery is spiny dogfish, the spiny dogfish FMP is discussed in more detail in Section 5.2.3. The spiny dogfish FMP was developed in response to classification of the spiny dogfish stock as overfished in 1998. The overall goal of the FMP is to conserve spiny dogfish in order to achieve optimum yield from the resource in the western Atlantic Ocean. Measures to rebuild the stock and to achieve optimum yield have included quotas and trip limits. Quotas and trip limits control the amount of fish that can be harvested. Prior to FY 2009, spiny dogfish trip limits were low, allowing retention of spiny dogfish caught incidentally to other target fisheries while rebuilding the spiny dogfish stock. The quota was tripled in FY 2009 to 12 million pounds, and the daily trip limit was increased from 600 to 3,000 pounds. Despite the increases in quota and trip limit, the spiny dogfish fishery in Federal waters has generally been an incidental fishery to other fisheries; therefore an increase in the quota has likely caused an increased proportion of the catch to be landed, rather than discarded. Furthermore, most of the landed catch has historically been with bottom gillnets, not bottom trawls. Since gillnets have a low impact on vulnerable benthic habitats and no appreciable amount of additional trawling was expected, this FMP has likely had a negligible effect on habitat.

Future Actions: Reasonably foreseeable future actions that will likely affect habitat include the EFH Omnibus Amendment (under development at this time). The EFH Omnibus Amendment will provide for a review and update of EFH designations, identify HAPCs, as well as provide an update on the status of current knowledge of gear impacts. It will also include new proposals for management measures for minimizing the adverse impact of fishing on EFH that will affect all species managed by the NEFMC, in a coordinated and integrated manner. These measures are likely to modify the boundaries of the existing habitat closed areas and/or replace them with entirely new – and smaller – areas that are more specifically designed to protect the most vulnerable habitats. Given the large-scale reductions in fishing effort that have taken place as a result of regulatory changes during the last decade, habitat protection measures in this amendment could result in a reduction in the total area that is closed to mobile, bottom-tending fishing gear. However, a more systematic approach to identifying the most vulnerable habitat areas should result in more effective habitat protection, (i.e., more protection per unit area closed). Areas that are presently closed year-round to limit fishing mortality on groundfish stocks – which overlap to a large extent with the existing habitat closures – would remain closed until resource management measures are implemented in future amendments to the multispecies, scallop, and monkfish FMPs that could affect their size or location. The net effect of new EFH and HAPC designations and more targeted habitat management measures should be positive for EFH.

The Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico ("Strategy") is a gear-based approach to addressing sea turtle bycatch, and is discussed in more detail in Section 5.2.3.4. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in a Notice of Intent (NOI) to prepare an EIS for Sea Turtle Conservation and Recovery in Relation to the Atlantic Ocean and Gulf of Mexico Trawl Fisheries (74 FR 88 May 8, 2009), NMFS is considering increasing the size of the escape opening for Turtle Excluder Devices (TEDs) in the summer flounder fishery, expanding the use of TEDs to other trawl fisheries, and modifying the geographic scope of the TED requirements. Since TED requirements may decrease the catch retention of some target species, vessels may tow longer to offset this loss of catch, likely resulting in negative impacts to habitat and EFH.

Skates are currently managed under an FMP, and Amendment 3 to the FMP is expected to go into effect on or before May 1, 2010. The purposes of Amendment 3 to the Skate FMP are to reduce discards and landings sufficiently to rebuild stocks of winter, thorny, and smooth skates, and to prevent other skates from becoming overfished. The new management measures in Amendment 3 result in a reduction in fishing effort to rebuild biomass. Reductions in fishing effort generally result in fewer habitat and gear interactions, a likely positive impact to the physical environment.

Framework Adjustment 44 (FW 44) to the Northeast Multispecies FMP would implement ACLs in FY 2010 for all Northeast multispecies stocks and make adjustments to the management measures to address stocks of concern and to manage the fishery in a more precautionary manner. This action is intended to work closely with and augment Amendment 16 to the Northeast Multispecies FMP, which is scheduled to be implemented on May 1, 2010. Although analysis is not complete, this action would potentially reduce fishing effort and consequently gear interactions; therefore, positive impacts to habitat/EFH are likely.

Summary of Impacts: As indicated in Table 5.2.3-1, management measures in Amendment 13, FW 42, Amendment 16, Amendment 3 to the Skate FMP, and FW 44 have (or would likely have) positive effects on habitat due to reduced fishing efforts, consequently reducing gear interaction with habitat. FW 40A and 40B resulted in negligible to low positive effects on habitat due to decreasing impacts to the bottom as more cod is caught with low impact fixed gear. The ALWTRP resulted in low negative to negligible effects on habitat due to the possibility of groundline sweep on the bottom and "ghost gear." The FMPs that reduce fishing effort generally result in fewer habitat and gear interactions, resulting in low positive effects on habitat. The proposed TED requirements would likely have negative effects on habitat due to potentially increased towing time. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on habitat.

5.2.3.2 Allocated Target Species

Past and Present Actions: Although management measures for groundfish were first enacted for the EEZ in 1977 under the original Groundfish FMP, the dramatic increase in larger vessels, bigger gear, and electronic aids such as fish finders and navigation equipment contributed to a greater efficiency and intensity of fishing, which in turn resulted in a precipitous drop in landings during the 1980's to an all-time low in the early 1990's. The following discussion is limited to past actions beginning with the implementation of Amendment 13. However, it should be noted that in general, management actions taken prior to Amendment 13 reduced effort on managed groundfish stocks, decreased impacts to habitat, reduced gear interactions with protected species, and had a negative impact on human communities. However, because actions prior to Amendment 13 did not rebuild overfished stocks to sustainable levels, greater effort reductions were necessary.

Management actions that affect allocated target species have been reviewed with some detail in the FSEIS of Amendment 13, the EA for FW 42, and the Final EIS of Amendment 16. Amendment 13, FW 42, and Amendment 16 have implemented (or would implement) restrictions on fishing effort in order to rebuild groundfish stocks. These restrictions were designed to have positive effects on groundfish, and they have indirectly had positive effects on non-allocated target species and bycatch caught in conjunction with the allocated target species. In contrast, FW 40A and 40B allowed for minor increases in fishing effort on cod and haddock, which is considered a low negative impact on these species.

As discussed in Section 4.3, the results of the 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. The stock of GB haddock is rebuilt, and GOM haddock, Acadian redfish, and American plaice are no longer overfished or experiencing overfishing, 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, which the proposed management measures in Amendment 16 to the Northeast Multispecies FMP address.

As discussed in Section 4.3, vessels operating under the Category B DAS program for multispecies reports indicate the top three species (by weight) other than multispecies that were landed in FYs 2006 and 2007 were skates, monkfish, and spiny dogfish. Since skates, monkfish, and spiny dogfish are managed by FMPs other than the Northeast Multispecies FMP, the impacts of these management measures are briefly discussed below.

The spiny dogfish FMP has resulted in an increase in stock biomass such that the most recent data indicates that the female spawning stock biomass is likely to be above the most recently calculated maximum sustainable yield biomass (B_{MSY}). This development has resulted in increases in both quota and trip limits for this species set by the FY 2009 specifications (MAFMC 2009). The specifications for FY 2010 are likely to maintain similar quota limits. With this increase in quotas and trip limits, it is likely that there will be an increase in the amount of spiny dogfish caught and landed by vessels fishing for groundfish. If the spiny dogfish stock remains at or above B_{MSY}, the dogfish fishery may reduce fishing effort on groundfish stocks, resulting in a low positive effect on allocated target groundfish species.

Monkfish is commonly caught along with groundfish and is considered one of the top target species that is not allocated to sectors by an ACE. Monkfish are currently regulated by the Monkfish FMP, which was implemented in 1999. 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. As of February 2010,, Amendment 5 to the Monkfish FMP will focus on completion of monkfish ACLs and accountability measures, and it also will include both days-at-sea and trip limits associated with the new catch targets based on updated stock information. The Monkfish FMP and subsequent amendments and framework actions have reduced fishing effort over the last decade, which has resulted in positive impacts for groundfish and non-groundfish stocks (including bycatch). Amendment 5 to the Monkfish FMP will either maintain the current level of fishing effort or allow for additional fishing above the current level, since both stocks of monkfish (North and South) are rebuilt.

Future Actions: The provisions in the EFH Omnibus Amendment could result in greater habitat protection for areas that are highly vulnerable to the adverse effects of fishing, resulting in a likely positive effect on groundfish. Further, NMFS is currently in a rule-making process to propose changes to the HPTRP which are intended to reduce harbor porpoise mortalities (74 FR 36058, July 21, 2009). This

action would likely result in vessels facing additional restrictions, possibly resulting in positive impacts to groundfish and other species taken incidentally.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch, and is discussed in more detail in Section 5.2.3.4. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in an NOI to prepare an EIS (74 FR 88 May 8, 2009), NMFS is considering increasing the size of the escape opening for TEDs in the summer flounder fishery, expanding the use of TEDs to other trawl fisheries, and modifying the geographic scope of the TED requirements. Since the sectors operate under an ACE, and assuming that the ACE is met, the TED requirements would likely have a negligible effect on the target species as the same quantity of targeted fish would be landed.

As indicated in Table 87 of the Final EIS for Amendment 16 to the Northeast Multispecies FMP, skates comprised nearly half the landings by weight for FY 2006 and 2007, under the Category B DAS (multispecies) program. Skates are currently managed under an FMP, and Amendment 3 to the FMP is expected go into effect on or before May 1, 2010. The purposes of Amendment 3 to the Skate FMP are to reduce discards and landings sufficiently to rebuild stocks of winter, thorny, and smooth skates, and to prevent other skates from becoming overfished. The new management measures in Amendment 3 result in a reduction in fishing effort to rebuild biomass. Therefore, the likely future impacts would be positive for the allocated multispecies stocks, which are simultaneously targeted with skates.

Atlantic wolffish was recently determined to likely be overfished. The species is occasionally caught along with groundfish in the Gulf of Maine and Georges Bank areas. Although not currently managed under an FMP, in response to the population decline, the NEFMC recommended as part of Amendment 16 that wolffish be included in the groundfish management unit under the Northeast Multispecies FMP and that neither commercial or recreational vessels be allowed to retain wolffish on board vessels. In addition, on October 1, 2008, the Conservation Law Foundation (CLF) submitted a petition to NMFS to list Atlantic wolffish as endangered under the Endangered Species Act. Previously, wolffish was listed as a "Species of Concern" in 2004 due to declining biomass which was attributed to commercial fishing, degradation of bottom habitat by trawls, and capture as bycatch by fisheries using otter trawls. On November 6, 2009 NMFS determined that listing of the Atlantic wolffish as threatened or endangered under ESA was not warranted.

FW 44 to the Northeast Multispecies FMP would implement ACLs in FY 2010 for all Northeast multispecies stocks and make adjustments to the management measures to address concerns and to manage the fishery in a more precautionary manner. Specifically, this action would implement catch specifications for all stocks for FYs 2010, 2011, and 2012, and implement modified trip limits and/or differential days-at-sea rules, as well as provide authority for the Regional Administrator to adjust such measures in-season. This action is intended to work closely with and augment Amendment 16 to the Northeast Multispecies FMP, which is scheduled to be implemented on May 1, 2010. The analysis indicates that this action would potentially reduce fishing effort; therefore, positive impacts on allocated species are likely, as the proposed management measures are designed to promote sustainability of these stocks.

Summary of Impacts: Amendment 13, FW 42, Amendment 16, and FW 44 have had (or would be expected to have) positive effects on allocated target species. Other FMPs that affect other species landed by groundfish sectors have also resulted in positive effects on allocated target species. Future measures that will likely restrict fishing effort (EFH Omnibus, HPTRP) will also have positive effects on allocated target species. Future measures such as the TED requirements would likely result in negative effects to allocated target species because lower catch retention would result in an increase in fishing effort. Actions that increase fishing effort (i.e., FW 40A and 40B) had low negative effects on allocated

target species. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on allocated target species.

5.2.3.3 Non-allocated Target Species and Bycatch

Past, Present Actions: "Non-allocated Target Species" refers to species which the sector members could also be targeting, but for which no ACE is allocated. As defined in the Magnuson-Stevens Act, bycatch refers to "fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards." For the purposes of this EA, the discussion of non-allocated target species and bycatch refers primarily to skates, monkfish, and dogfish. These species dominate bycatch (i.e., dogfish) or are the primary alternate species that are landed by groundfishermen (i.e., monkfish and skates). Management actions that reduce fishing effort (i.e., Amendment 13, FW 42, and Amendment 16) have or will likely have positive effects on both landed species and on bycatch. Conversely, actions that increase fishing effort (i.e., FW 40A and FW 40B) have low negative effects on both landed species and bycatch.

Spiny dogfish was one of the top non-groundfish species landed by multispecies vessels under the Category B (regular) DAS program (Table 87 of Amendment 16 Final EIS). This species primarily interacts with gillnet and hook and line gear, and represented over 90 percent of the bycatch reported by the Georges Bank Cod Fixed Gear and Hook Sectors in previous years. Since the spiny dogfish stock is managed under a FMP separate from the Northeast Multispecies FMP, the impacts of the spiny dogfish FMP are briefly discussed. The spiny dogfish FMP was implemented in 2000 in response to a decline in the female spawning stock biomass, and it initiated stock rebuilding measures. Included among the approved management measures in the FMP was the requirement that the MAFMC and NEFMC jointly develop annual specifications, which include a commercial quota to be allocated on a semi-annual basis, and other restrictions to assure that fishing mortality targets will not be exceeded. As presented to the NEFMC in November 2009, the 2009 stock assessment update indicates that the female spawning stock biomass is estimated to be 16 percent lower than in 2008. Despite this decline, the assessment update indicates that this species is not overfished and overfishing is not occurring. The results of a new spiny dogfish benchmark assessment through the Transboundary Resource Assessment Committee (TRAC) will likely be available in March 2010. The dogfish FMP has resulted in a positive impact to the dogfish stock, the primary bycatch species of the groundfish fleet.

Monkfish is commonly caught along with groundfish and is considered one of the top target species that is not allocated to sectors by an ACE (i.e., non-allocated target species). Monkfish are currently regulated by the Monkfish FMP, which was implemented in 1999. The Monkfish FMP and subsequent amendments and framework actions have reduced fishing effort over the last decade, which has resulted in positive impacts for groundfish and non-groundfish stocks (including bycatch).

Future Actions: Implementation of the EFH Omnibus Amendment may also result in additional habitat protections for which there is an indirect positive effect to bycatch species, as they would also receive protection. As with allocated target species, if revisions are made to the HPTRP, vessels could face additional restrictions, possibly resulting in positive impacts to bycatch through effort reductions. Amendment 5 to the Monkfish FMP will either maintain the current level of fishing effort or allow for additional fishing above the current level, since both stocks of monkfish (North and South) are rebuilt.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch, and is discussed in more detail in Section 5.2.3.4. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in an NOI to prepare an EIS (74 FR 88 May 8, 2009), NMFS is considering increasing the size of the escape opening for TEDs in the summer flounder fishery, expanding the use of TEDs to other trawl fisheries, and modifying the geographic scope

of the TED requirements. TED requirements would likely have a positive effect on bycatch and discards as they would likely exclude some of these species from capture in the cod- end.

As indicated in Table 87 of the Final EIS for Amendment 16 to the Northeast Multispecies FMP, skates comprised nearly half the landings by weight for FY 2006 and 2007, under the Category B DAS (multispecies) program. Skates are currently managed under an FMP, and Amendment 3 to the FMP is expected to go into effect on or before May 1, 2010. The purposes of Amendment 3 to the Skate FMP are to reduce discards and landings sufficiently to rebuild stocks of winter, thorny, and smooth skates, and to prevent other skates from becoming overfished. The new management measures in Amendment 3 result in a reduction in fishing effort to rebuild biomass. Therefore, the likely future impacts would be positive for skates, which in this assessment is considered to be a non-allocated target species.

FW 44 to the Northeast Multispecies FMP would implement ACLs in FY 2010 for all Northeast multispecies stocks and make adjustments to the management measures to address stocks of concern and to manage the fishery in a more precautionary manner. This action is intended to work closely with and augment Amendment 16 to the Northeast Multispecies FMP, which is scheduled to be implemented on May 1, 2010. Although analysis is not complete, this action would potentially reduce fishing effort; therefore, positive impacts to non-allocated target species and bycatch are likely.

Summary of Impacts: As indicated in Table 5.2.3-1, actions that reduce fishing effort have had positive effects on non-allocated target species and bycatch because in general, less fishing effort results in less impact to non-allocated target species and bycatch. Conversely, actions that increase fishing effort (i.e., FW 40A and FW 40B) are considered to have low negative effects on non-allocated target species and bycatch because more fishing generally results in more non-allocated target species and bycatch. TEDs requirements would likely have a positive effect on non-allocated target species and bycatch and discards as they would likely exclude some of these species from capture in the cod-end. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on non-allocated target species and bycatch.

5.2.3.4 Protected Resources

This section includes discussion of protected resources management actions that are relevant to groundfish and/or the SHS.

Past and Present Actions: Reductions in fishing effort through the implementation of management actions such as Amendment 13, FW 42, Amendment 16, and FMPs have generally had (or are expected to have) positive effects on protected resources by limiting the amount of fishing gear used in their geographic range during the fishing year, which may result in reductions in the rates of gear interaction with endangered species and other protected resources.

In addition to these actions, NMFS has implemented specific regulatory actions to reduce injuries and mortalities from gear interactions. The ALWTRP, implemented in 1999 with subsequent rule modifications, restrictions, and extensions, includes time and area closures for trap/pot fisheries (e.g., lobster and black sea bass) and gillnet fisheries (e.g., anchored gillnet and shark gillnet fisheries); gear requirements, including a general prohibition on having line floating at the surface in these fisheries; a prohibition on storing inactive gear at sea; and restrictions on setting shark gillnets off the coasts of Georgia and Florida and drift gillnets in the Mid-Atlantic. This plan also contains non-regulatory aspects, including gear research, public outreach, scientific research, a network to inform mariners when right whales are in an area, and increasing efforts to disentangle whales caught in fishing gear. The intent of the ALWTRP is to positively affect large whales by reducing injuries and deaths of large whales (North

Atlantic right, humpback, and fin) in waters off the U.S. East Coast due to incidental entanglement in fishing gear.

Future Actions: The likely impacts of the EFH Omnibus Amendment on protected resources cannot be determined at this time. The HPTRP for the Gulf of Maine and Mid-Atlantic Coasts was originally implemented in 1998, and NMFS published a proposed rule in July 2009 indicating additional management restrictions for gillnetters. Future measures of this plan may be implemented if take reduction goals are not met, which could further reduce fishing effort. Amendment 3 to the Skate FMP may also require a reduction in fishing effort, resulting in low positive effects to protected resources.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch. Under the Strategy, NMFS has identified reducing impacts of trawl gear as a priority for reducing sea turtle bycatch and is considering proposing changes to the TED requirements in the trawl fisheries. TED requirements are designed to have a positive effect on protected resources, specifically by allowing most turtles caught in trawl nets to escape. NMFS is working to develop and implement bycatch reduction measures in all trawl fisheries in the Atlantic and Gulf of Mexico when and where sea turtle takes have occurred or where gear, time, location, fishing method, and other similarities exist between a particular trawl fishery and sea turtle takes have occurred by trawls (72 FR 7382, February 15, 2007). On February 15, 2007, NMFS issued an advance notice of proposed rulemaking to announce that it is considering amendments to the regulatory requirements for TEDs (72 FR 7382). On May 8, 2009, NMFS issued an NOI to prepare an EIS (74 FR 88 May 8, 2009), and held public scoping meetings throughout the East coast.

Although not currently managed under an FMP, in response to the apparent population decline, the NEFMC recommended as part of Amendment 16 that wolffish be included in the groundfish management unit under the Northeast Multispecies FMP and that neither commercial or recreational vessels be allowed to retain wolffish on board vessels. In addition, on October 1, 2008, CLF submitted a petition to NMFS to list Atlantic wolffish as endangered under the Endangered Species Act. Previously, wolffish was listed as a "Species of Concern" in 2004 due to declining biomass which was attributed to commercial fishing, degradation of bottom habitat by trawls, and capture as bycatch by fisheries using otter trawls. On November 6, 2009 NMFS determined that listing of the Atlantic wolffish as threatened or endangered under ESA was not warranted.

FW 44 to the Northeast Multispecies FMP would implement ACLs in FY 2010 for all Northeast multispecies stocks and make adjustments to the management measures to address stocks of concern and to manage the fishery in a more precautionary manner. This action is intended to work closely with and augment Amendment 16 to the Northeast Multispecies FMP, which is scheduled to be implemented on May 1, 2010. Although analysis is not complete, this action would potentially reduce fishing effort and correlate opportunities for interactions with protected species; therefore, positive impacts to protected resources are likely.

Summary of Impacts: As indicated in Table 5.2.3-1, management actions that reduce fishing effort also reduce gear interaction with protected resources, resulting in positive effects. FW 40A and 40B allowed minor increases in fishing with fixed gear, which has negligible impacts on protected resources. With the exception of the EFH Omnibus Amendment, all other management actions described were designed to benefit protected resources; therefore, these actions are all considered to have positive effects on this VEC. Overall, the cumulative effect of these past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on protected resources.

5.2.3.5 Human Communities

The following discussion focuses on the general area of the homeports of the SHS. Discussion of impacts to Sector members refers to the participants in the Sector, which is the focus of this EA.

Past and Present Actions: Past and present actions that have had negative short-term and low positive long-term impacts to the port communities and positive impacts to future members of the SHS include Amendment 13, FW 42, and Amendment 16. These actions both substantially cut fishing effort in order to rebuild stocks by mandated timeframes, resulting in economic losses in the short-term. Because these actions are designed to rebuild the groundfish stocks and stabilize the fishing industry, these actions are expected to have long-term positive effects on the human communities. Amendment 13 also created a sector management option and implemented the Georges Bank Cod Hook Sector, while FW 42 implemented the Georges Bank Cod Fixed Gear Sector. Because FW 42 implemented further reductions in fishing on groundfish, this action caused substantial negative impacts in the short-term to groundfish-dependent ports. In the long-term, these ports are expected to experience positive effects as groundfish stocks rebuild to sustainable levels. Amendment 16 will result in more restrictive effort control measures and reductions in ACLs for all groundfish stocks regulated by the Northeast Multispecies FMP, which will result in revenue declines for Common Pool vessel operators and their ports.

FW 40A implemented the Closed Area I Hook Gear Haddock SAP which allowed increased opportunities for the Georges Bank Cod Fixed Gear and Hook Sectors to fish healthy haddock stocks using hook gear only, resulting in a low positive effect for members of these sectors. FW 41 allowed non-sector vessels to participate in the Closed Area I Hook Gear Haddock SAP, which extended the positive economic effects to non-sector vessels and increased revenue for the port communities, resulting in a low positive effect.

FW 40B allowed vessels with no hook history to join the Georges Bank Cod Hook Sector and contribute their historical cod landings to the Sector's allocation based on landings made with gear types other than hook gear, resulting in a low positive impact to the Sector participants.

As discussed in Section 5.2.1.4, the ALWTRP had impacts on the human community ranging from low negative to negligible, primarily because these measures required minor gear modifications for gillnet gear to reduce impacts to protected resources.

In the short-term, the spiny dogfish FMP has had a low negative effect on human communities because of the implementation of quotas and trip limits, therefore, reducing revenue. However, the FY 2009 specifications increased the quota and trip limits because the species is no longer considered overfished nor is overfishing occurring. This increase in quota and the rebuilding goal of the FMP will likely have a positive impact on the human communities because there will be a sustainable fishery available for harvest.

Future Actions: Amendment 3 to the Skate FMP will likely have negative economic impacts on the ports and Sector members because of the expected restrictions on fishing effort. Similarly, the future actions of the HPTRP could have negative impacts, particularly if the impacts from this plan compound reductions implemented via Amendment 16. Cumulative effects of the EFH Omnibus Amendment cannot easily be determined, but if additional effort restrictions were implemented, or if new areas are closed for habitat protection that further restrict access to fishing grounds (while the existing groundfish closed areas remain in place), this action too would likely have a negative impact.

The sea turtle Strategy is a gear-based approach to addressing sea turtle bycatch, and is discussed in more detail in Section 5.2.3.4. NMFS is currently considering proposing changes to the regulatory requirements for trawl fisheries to protect sea turtles. As described in an NOI to prepare an EIS (74 FR 88 May 8, 2009), NMFS is considering increasing the size of the escape opening for TEDs in the summer flounder fishery, expanding the use of TEDs to other trawl fisheries, and modifying the geographic scope of the TED requirements. TED requirements would likely have a negative economic effect on Sector members that trawl because of the costs associated with adding and/or modifying TEDs to comply with the new regulation and the costs associated with a decrease in landed species if vessels would not offset a loss in catch.

FW 44 to the Northeast Multispecies FMP would implement ACLs in FY 2010 for all Northeast multispecies stocks and make adjustments to the management measures to address stocks of concern and to manage the fishery in a more precautionary manner. This action is intended to work closely with and augment Amendment 16 to the Northeast Multispecies FMP, which is scheduled to be implemented on May 1, 2010. Although analysis is not complete, this action would potentially reduce fishing effort and consequently reduce revenue; therefore, negative impacts ports and sector members are likely.

Summary of Impacts: As indicated in Table 5.2.3-1, the effects of past, present, and reasonably foreseeable future fishery management actions have been positive on nearly all VECs with the exception of human communities. Mandated reductions in fishing effort have resulted in negative economic impacts to human communities. Management measures designed to benefit protected resources and restrict fishing effort have low negative effects on the human communities. However, the establishment of sectors and the ultimate goal of rebuilding groundfish stocks to sustainable levels will benefit the human communities eventually. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in negative effects on human communities.

5.2.4 Non-Fishing Effects: Past, Present, and Reasonably Foreseeable Future Actions

Non-fishing activities that occur in the marine nearshore and offshore environments and their watersheds can cause the loss or degradation of habitat and/or affect the species that reside in those areas. Table 5.2.4-1 provides a summary of past, present, and reasonably foreseeable non-fishing activities and their expected effects on VEC's in the affected environment. The following discussions of impacts are based on past assessments of activities and assume these activities will likely continue into the future as projects are proposed. More detailed information about these and other activities and their impacts are available in the publications by Hansen (2003) and Johnson et al. (2008).

Construction/Development Activities and Projects: Construction and development activities include, but are not limited to, point source pollution, agricultural and urban runoff, land (roads, shoreline development, wetland loss) and water-based (beach nourishment, piers, jetties) coastal development, marine transportation (port maintenance, shipping, marinas), marine mining, dredging and disposal of dredged material and energy-related facilities, all of which are discussed in detail in Johnson et al. (2008). These activities can introduce pollutants (through point and non-point sources), cause changes in water quality (temperature, salinity, dissolved oxygen, suspended solids), modify the physical characteristics of a habitat or remove/replace the habitat altogether. Many of these impacts have occurred in the past and present and their effects would likely continue in the reasonably foreseeable future. It is likely that these projects would have negative impacts caused from disturbance, construction, and operational activities in the area immediately around the affected project area. However, given the wide distribution of the affected species, minor overall negative effects to offshore habitat, protected resources, allocated target stocks, and non-allocated target species and bycatch are anticipated since the affected areas are localized to the project sites, which involve a small percentage of the fish populations and their habitat. Thus, these activities for most biological VECs would likely have an overall low negative effect due to limited

exposure to the population or habitat as a whole. Any impacts to inshore water quality from these permitted projects, including impacts to planktonic, juvenile, and adult life stages, are uncertain but likely minor due to the transient and limited exposure. It should be noted that 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 allocated target stocks, non-allocated target species and bycatch, and protected resources.

Similar to the discussion above on non-fishing impacts to fish habitat, generally the closer the proximity of groundfish stocks to the coast, the greater the potential for impact (although predation, a non-fishing impact, would be one threat that would occur everywhere). Many groundfish species reside in both inshore and offshore areas at different stages of their lives and during different seasons throughout the year. However, some species, such as SNE/MA winter flounder, spend a large portion of their lives closer to shore and may likely be impacted by inshore threats to a greater degree than some of the other groundfish species. In the offshore areas, such effects would likely be low because the localized nature of the effects would minimize exposure to organisms in the immediate area.

These projects are permitted by other federal and state agencies that conduct examinations of potential biological, socioeconomic, and habitat impacts. In addition to guidelines mandated by the Magnuson-Stevens Act, and the Fish and Wildlife Coordination Act, NMFS, the Councils, and the other federal and state regulatory agencies review these projects through a process required by the Clean Water Act; Rivers and Harbors Act; and the Marine Protection, Research, and Sanctuaries Act for certain activities that are regulated by federal, state, and local authorities. These reviews limit and often mitigate the impact of these projects. The jurisdiction of these authorities is in the "waters of the U.S." and ranges from inland riverine to marine habitats offshore in the EEZ.

Restoration Projects: Other regional projects that are restorative or beneficial in nature include estuarine wetland restoration; offshore artificial reef creation, which provides structure and habitat for many aquatic species; and eelgrass (*Zostera marina*) restoration, which provides habitat for, among other things, juvenile Atlantic cod. These types of projects improve habitats, including nursery habitats for several commercial groundfish species. Due to past and present adverse impacts from human activities on these types of habitat, restorative projects likely have slightly positive effects at the local level.

Protected Resources Rules: The NMFS final Rule on Ship Strike Reduction Measures (73 FR 60173, October 10, 2008) is a non-fishing action in the United States-controlled North Atlantic that is likely to affect endangered species and protected resources. The goal of this rule is to significantly reduce the threat of ship strikes on North Atlantic right whales and other whale species in the region. Ship strikes are considered the main threat to North Atlantic right whales; therefore, NMFS anticipates this regulation will result in population improvements to this critically endangered species.

Energy Projects: Cape Wind Associates (CWA) proposes to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket Island in Nantucket Sound, Massachusetts. The CWA project would have 130 wind turbines located as close as 4.1 miles off the shore of Cape Cod in an area of approximately 24 square miles with the turbines being placed at a minimum of 1/3 of a mile apart. The turbines would be interconnected by cables, which would relay the energy to the shore-based power grid. If constructed, the turbines would preempt other bottom uses in an area similar to oil and natural gas leases. The potential impacts associated with the CWA offshore wind energy project include the construction, operation, and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures.

TABLE 5.2.4-1
Summary of Effects from Past, Present and Reasonably Foreseeable Non-fishing Actions in the Affected Environment.

Non-Fishing Actions	Physical Environment Impacts	Biological Environment Impacts			Human Community Impact	
	Habitat	Allocated Target Species	Non-allocated Target Species and Bycatch	Protected Resources	Ports	Sector Participants
Past, Present, and Reasonably Foreseeable Future Actions						
General Construction and Development Activities	(-) in nearshore Likely L(-) in offshore	Likely L(-)	Likely L(-)	Likely L(-)	Negl	Negl
Point and non-point source (agricultural/urban runoff) pollution	(-) in nearshore L(-) in offshore	Likely L(-)	Likely L(-)	Likely L(-)	Negl	Negl
Offshore disposal of dredged materials	L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Negl	Negl
Beach Nourishment	L(-)	Likely L(-)	Likely L(-)	Negl	Negl	Negl
Installation of offshore wind farm and infrastructure	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)
Installation of infrastructure associated with liquefied natural gas terminals	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)
Restoration Activities (wetland restoration, artificial reefs, eelgrass, etc…)	(+)	(+)	(+)	(+)	(+)	(+)
Implementation of National Marine Fisheries Service Final Rule on Ship Strike Reduction Measures	Likely Negl	Likely Negl	Likely Negl	Likely (+)	Likely Negl	Likely Negl
Summary of Impacts	**(-) to L(-)**	**L(-)**	**L(-)**	**L(-)**	**Negl to L(-)**	**Negl to L(-)**

Note:

Unless noted otherwise, the impacts of most of these actions are localized and although considered negative at the site, they have an overall low negative or negligible effect on each VEC due to limited exposure of action to the population or habitat as a whole

Other offshore projects that can affect VECs include the construction of offshore liquefied natural gas (LNG) facilities such as the project "Neptune." The first phase of this project construction was completed in September 2008, which includes the installation of a 13-mile subsea pipeline. The second phase will connect the new pipeline to an existing pipeline network called HubLine east of Marblehead, Massachusetts, and will install the two off-loading buoys 10 miles off the coast of Gloucester, Massachusetts. Upon completion, the LNG facility will consist of an unloading buoy system where specially designed vessels will moor and offload their natural gas into a pipeline, which will deliver the product to customers in Massachusetts and throughout New England. As it related to the impacts of the Proposed Action, the Neptune project is expected to have small, localized impacts where the pipelines and buoy anchors contact the bottom.

Summary of Impacts: Most of the impacts from these aforementioned activities are uncertain but would likely range from negative to low negative in the immediate areas of the project site. However, on a larger-scale population level, these activities are likely to have a low negative to negligible impact on a population level, considering that the large portion of the populations have a limited or negligible exposure to these local non-fishing perturbations and that existing regulatory requirements would likely mitigate the severity of many impacts (see Table 5.2.4-1).

5.2.5 Summary of Cumulative Effects

The cumulative effects resulting from the implementation of the FY 2010 SHS Operations Plan and the CEA Baseline are summarized in Table 5.2.5-1, and discussed by VEC in the following sections.

5.2.5.1 Physical Environment/Habitat/EFH

The operation of vessels in all other sectors would have negligible impacts on benthic/demersal habitat, since these vessels, under the No-Action Alternative, would be in the Common Pool and would have fished in the same areas. Generally, management measures that have reduced fishing effort are thought to have had a positive impact on habitat and EFH since the repeated use of trawls/dredges reduces bottom habitat complexity, ultimately decreasing the value of habitat for demersal fish. The effects from non-fishing actions are also expected to be negative to low negative as the potential for localized harm to VECs exists. SHS would primarily use trawl gear, which results in greater impacts to the seafloor than fixed gear; however, the difference in the impacts of the Sector and those same vessels operating in the Common Pool (i.e., the No-Action Alternative) would be negligible. The summary of impacts for physical environment/habitat/EFH from Sector operations and CEA Baseline is expected to be negligible and not significant due to these above stated reasons.

5.2.5.2 Allocated Target Species

The operation of vessels in all other sectors would have negligible impacts on allocated target species, due to the imposition of an ACE for each allocated target species. A major goal of the Northeast Multispecies FMP is to allow for the rebuilding of stocks; therefore, continued management actions should have a positive impact on allocated target species. The effects from non-fishing actions are expected to be low negative as the potential for localized harm to VECs exists. The approval of the SHS would have negligible impacts on allocated target species, since fishing mortality would be controlled by an ACE for each multispecies stock. The summary of impacts for allocated target species from Sector operations and CEA Baseline is expected to be negligible and not significant due to these above stated reasons.

5.2.5.3 Non-allocated Target Species and Bycatch

The operation of vessels in all other sectors would have negligible impacts on non-allocated target species and bycatch, because the catch rate for non-allocated target stocks are likely linked to that of allocated target stocks, the allocations of which are controlled by ACEs. The end result would be little if any increase in impacts to non-allocated target species and bycatch under sector management relative to the Common Pool. One of the mandates of FMPs is to minimize bycatch and discard species. Therefore, with continued management actions, FMPs should have a positive impact on bycatch and discard species. The effects from non-fishing actions are expected to be low negative as the potential for localized harm to VECs exists. In general, the anticipated effect of the SHS formation and operation in FY 2010 is to convert vessel catch into more landing and less discard while not exceeding ACEs, resulting in negligible impacts to non-allocated target species and bycatch relative to the actions of vessels in the Common Pool. The summary of impacts for non-allocated target species and bycatch species from Sector operations and CEA Baseline is expected to be negligible and not significant due to these above stated reasons.

5.2.5.4 Protected Resources

The operation of all other sectors may increase the potential for gear interactions with protected species, relative to the vessels operating in the Common Pool, due to the universal exemptions that would be granted to sectors by Amendment 16, along with several Sector-specific exemptions. This potential increase in gear interaction due to operation of vessels in all other sectors would likely have low negative impacts on protected resources. The implementation of FMPs and sectors have resulted in reductions in fishing effort and as a result, past fishery management actions are thought to have had a slightly positive impact on strategies to protect protected species. Gear entanglement continues to be a source of injury or mortality, resulting in some adverse effects on most protected species to varying degrees. One of the goals of future management measures will be to decrease the number of marine mammal interactions with commercial fishing operations. Measures proposed by Amendment 16 to the Northeast Multispecies FMP will substantially reduce the overall commercial fishing effort and the amount of groundfish that can be caught, relative to historical amounts that have been harvested by the commercial multispecies fleet. The cumulative result of these actions to meet mortality objectives will be positive for protected resources. The effects from non-fishing actions are also expected to be low negative as the potential for localized harm to VECs exists. The SHS has requested exemptions from the 20-day spawning block, 120-day gillnet, and gillnet limit block. This measure may increase the number of gear days and/or the amount of gear in the water during seasons when marine mammals and sea turtles are more abundant, which may result in increased gear interactions relative to the No-Action Alternative and would likely result in low negative impacts to protected resources. Although the SHS would retain a third or more of the total ACL for several groundfish stocks, the exploitation rates for all groundfish stocks managed by the Northeast Multispecies FMP will be reduced by roughly 40 to 60 percent, and the overall summary of impacts from Sector operations and CEA Baseline on protected resources would likely be low negative, but not significant due to these above stated reasons.

5.2.5.5 Human Communities and Social and Economic Environment

The operation of vessels in all other sectors would have low positive impacts on human communities, including ports and sector participants, due to the flexibility that sector management provides. Past management actions have had a negative impact on communities that depend on the groundfish fishery. Although special programs implemented through Amendment 13 and subsequent framework actions have provided the industry additional opportunities to target healthier groundfish stocks, substantial increases in landings and revenue will likely not take place until further stock rebuilding occurs under the Amendment 16 rebuilding plan. The effects from non-fishing actions are also expected to be negligible to low negative as the potential for localized harm to VECs exists. The SHS

would allow sector members to achieve maximum efficiency and flexibility while at the same time remaining consistent with the rebuilding programs for stocks. Economic benefits can be accrued to the sector members because they are given the flexibility to make market-based decisions on when and where to fish. Operating under sector management also would allow for fishing to occur when weather conditions were safest. The summary of impacts from implementation of sector operations is expected to be low positive for human communities. However, within the context of the region and the fishery as a whole, these benefits would be insignificant as determined under criteria of the Regulatory Flexibility Act (see Section 8.10). The summary of impacts from sector operations and CEA Baseline on human communities would be low positive and not significant due to these above stated reasons.

Conclusion

In conclusion, the summary of impacts from SHS operations and CEA Baseline would be negligible on habitat, allocated target species, and non-allocated target species and bycatch; likely low negative to protected resources; and low positive to human communities (Table 5.2.5-1). These impacts would not be significant due to the reasons stated in this assessment.

TABLE 5.2.5-1
Cumulative Effects Resulting from Implementation of the Fishing Year 2010 Sustainable Harvest Sector Operations Plan and CEA Baseline

		Habitat Impacts	Biological Impacts			Human Community Impacts	
		Habitat	**Allocated Target Species**	**Non-allocated Target Species and Bycatch**	**Endangered/ Protected Species**	**Ports Chatham/ Harwich**	**Sector Participants**
Cumulative Effect Baseline	Effects of Future Operations of all other sectors (see Table 5.2.2-1)	Negl	Negl	Negl	Likely L(-)	L(+)	L(+)
	Effects of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions (see Table 5.2.4-1)	(-) to L(-)	L(-)	L(-)	L(-)	Negl to L(-)	Negl to L(-)
	Effects of Past, Present, and Reasonably Foreseeable Future Fishing Actions (see Table 5.2.3-1)	(+)	(+)	(+)	(+)	(-)	(-)
Direct and Indirect Effects of Proposed Sector Operations (see Table 5.1-1)		Negl	Negl	Negl	Likely L(-)	L(+)	L+()
Cumulative Effects Sum of Effects from implementation of Sector operations and Cumulative Effect Baseline		Negl	Negl	Negl	Likely L(-)	L(+)	L(+)

6.0 LIST OF PREPARERS AND POINTS OF CONTACT

This document was prepared through the cooperative efforts of staff members of ENTRIX; the Associated Fisheries of Maine; the Gulf of Maine Research Institute (GMRI); and National Marine Fisheries Service (NMFS).

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7.0 PERSONS AND AGENCIES CONSULTED

Staff members of National Marine Fisheries Service (NMFS) Northeast Regional Office and Northeast Fisheries Science Center were consulted in preparing this Environmental Assessment (EA).

8.0 COMPLIANCE WITH APPLICABLE LAWS AND EXECUTIVE ORDERS

8.1 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The Proposed Action would comply with all elements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), including the National Standards, and the Northeast (NE) Multispecies Fishery Management Plan (FMP). This action is being taken in conformance with the NE Multispecies FMP, which requires that an Environmental Assessment (EA) of the Sustainable Harvest Sector operations plan be prepared in compliance with National Environmental Protection Act (NEPA), Magnuson-Stevens Act, and other applicable laws and Executive Orders. Amendment 13 to the FMP established the sector operations plan approval process and was approved on

April 27, 2004. Amendment 16 to the FMP authorizes up to17 additional sectors, including the Sustainable Harvest Sector, Port Clyde Community Groundfish Sector, Tri-State Sector, Northeast Coastal Communities Sector, and Northeast Fishery Sectors I through XIII. Nothing in this action changes the findings in Amendment 16 that this action complies with the provisions of the Magnuson-Stevens Act.

Section 301 of the Magnuson-Stevens Act requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The most recent FMP changes proposed in Amendment 16 address how the proposed management actions comply with the National Standards. Under Amendment 16, the NEFMC adopted conservation and management measures that would end overfishing and rebuild NE multispecies stocks to achieve, on a continuing basis, the optimum yield for NE multispecies stocks and the U.S. fishing industry using the best scientific information available (National Standard 2), managing all 20 stocks (13 species) throughout their range (National Standard 3). The NEFMC specifies in Amendment 16 that the management measures do not discriminate among residents of different states (National Standard 4), do not have economic allocation as their sole purpose (National Standard 5), account for variations in these fisheries (National Standard 6), avoid unnecessary duplication (National Standard 7), take into account fishing communities (National Standard 8), address bycatch in fisheries (National Standard 9), and promote safety at sea (National Standard 10). By proposing to meet the National Standards requirements of the Magnuson-Stevens Act through future FMP amendments and framework actions, the NEFMC will ensure that overfishing ends, overfished stocks are rebuilt, and the maximum benefits possible accrue to the ports and communities that depend on these fisheries and the Nation as a whole. Annual review of sector operations plans ensures that proposed sector activities are consistent with the rebuilding plan for NE multispecies stocks.

An EFH assessment and EFH consultation are not required as determined by a Habitat Conservation Division Review (October 29, 2009).

8.2 ENDANGERED SPECIES ACT (ESA)

Formal consultation under Section 7 of the ESA is has been reinitiated and is ongoing for the NE Multispecies Fishery Management Plan (FMP). NMFS has determination that continued operation of the FMP during the consultation period, as authorized by NMFS, will neither jeopardize the continued existence of endangered and threatened species, nor destroy or adversely modify designated critical habitat. Allowing the fishery to continue during the consultation period will not result in any irreversible or irretrievable commitment of resources that would have the effect of foreclosing the formulation or implementation of reasonable and prudent alternatives in the completion of the consultation and biological opinion. NMFS has also determined that the Proposed Action to approve and implement regulations for Amendment 16 would not cause an effect to ESA-listed species not considered in previous consultations on the FMP; and, therefore, does not trigger the need to reinitiate consultation.

8.3 MARINE MAMMAL PROTECTION ACT (MMPA)

NMFS has reviewed the impacts of the FY 2010 Sustainable Harvest Sector operations plan on marine mammals and concluded that the management actions proposed are consistent with the provisions of the MMPA and would not alter existing measures to protect the species likely to inhabit the management unit of the NE multispecies FMS. For further information on the potential impacts of the proposed management action, see Section 5.1.4.1.

8.4 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6 (NAO 216-6) (May 20, 1999) contains criteria for determining the significance of the impacts of a Proposed Action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 C.F.R. 1508.27 states that the significance of an action should be analyzed both in terms of "context" and "intensity." The Proposed Action in this Environmental Assessment is outlined in the Sector's Operations Plan as approved by the National Marine Fisheries Service. Each criterion listed below is relevant in making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

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

Response: The Proposed Action would not jeopardize the sustainability of any of the target species (cod [GB and GOM stocks], haddock [GB and GOM stocks], yellowtail flounder [GB, GOM, SNE stocks], American plaice, witch flounder, winter flounder [GB and GOM stocks], redfish, white hake, and pollock) affected by the action, because the Sustainable Harvest Sector has an Allowable Catch Entitlement (ACE) for each stock listed above that is a portion of the Annual Catch Limit (ACL) established by the Northeast (NE) Multispecies FMP and that would be adhered to on an annual basis. The biological impacts of the Proposed Action on the allocated target species are analyzed in Section 5.1.2.1.

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

Response: The Proposed Action is not expected to jeopardize the sustainability of any non-allocated target species. If increased flexibility by the Sustainable Harvest Sector improves the harvest of target species similarly to non-allocated target species and bycatch, then the relative catch rate of non-allocated target species and bycatch would be controlled by ACE. Once an ACE has been reached, fishing must cease. If Sector members are able to successfully target certain allocated species, the amount of bycatch would decline relative to historical catch. The anticipated effect of Sustainable Harvest Sector formation and operation under allocations constrained by ACEs (as described in Amendment 16) would be to convert more vessel catch into landings and less into discards than if those same vessels were to fish within the Common Pool (Section 5.1.3.1).

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 is not expected to allow substantial damage to the ocean and coastal habitats and/or Essential Fish Habitat (EFH) as defined under the Magnuson-Stevens Act and identified in the FMP. Further, since Sustainable Harvest Sector will continue to use traditional fishing gear and maintain current fishing practices, the Proposed Action will have the same impacts on marine habitats or EFH as common pool vessels using similar gear and largely fishing in the same areas (Section 5.1.1.1).

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

Response: The Proposed Action is not expected to have a substantial adverse impact on public health and safety. The proposed Sustainable Harvest Sector would involve routine fishing operations and would not affect safety at sea. Because of fishing effort would be controlled by species-specific ACE rather than Days-At-Sea, sector members would have increased flexibility to decide when to fish. This flexibility would likely increase revenues, allow fishermen to more fully exploit previously under-exploited stocks, and reduce incentive to fish in unsafe conditions (Section 5.1.5.1).

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 is not expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species. Sustainable Harvest Sector members would primarily use trawls, gillnets, hook and line gear, the same gear utilized by the common pool. Impacts to cetaceans and pinnipeds from the use of gillnets would be minimized by use of the Take Reduction Plans, as discussed in Section 4.4.4. Trawl gear is generally considered to have low impacts on most protected resources. Hook and line gear is generally considered to have low impacts on most protected resources. Provisions of Amendment 16 would exempt sectors from effort control measures (e.g., DAS limits, trip limits, area closures, and mesh size) which generally allow for an increased chance of interactions between sector vessels and protected resources due to fishing activities in previously closed areas and a potential increase in gear days. Overall, impacts to protected resources associated with operation of the sector would likely be low negative, but not significant (Section 5.1.4.1).

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 ecosystem function within the affected area. Implementation of the Sustainable Harvest Sector Operations Plan would limit the amount of groundfish the sector would be allowed to catch and land. Once the ACE has been reached, sector vessels would no longer be able to expend effort on catching *groundfish.*

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

Response: There are no significant social and economic impacts of the Proposed Action that are interrelated with natural or physical environmental effects. The Proposed Action would allocate ACE to Sustainable Harvest Sector for 14 stocks of groundfish, which sets a limit on the amount of groundfish that Sustainable Harvest Sector can catch. Sustainable Harvest Sector members would be exempt from several restrictions of the FMP, however, Sustainable Harvest Sector members will primarily use trawl, gillnet, and hook and line gear and maintain traditional fishing practices which will have no greater impact on habitat, protected species, and limit bycatch species as compared to the common pool and the groundfish fishery before sectors (Sections 5.1.2 through 5.1.4). The operation of Sustainable Harvest Sector would continue to mitigate the negative economic impacts that result from the current suite of regulations that apply to the groundfish fishery as well as meet the conservation requirements of the FMP. The operations plan allows flexibility and economic opportunity to the Sector members and their communities. However, within the context of the region and the fishery as a whole, these benefits would be insignificant as determined under criteria of the Regulatory Flexibility Act (see Section 8.10). Further,

while the Sector members benefit socially and economically by the ability to self-regulate, this opportunity is not related with any impacts associated with the biological or physical environment. Therefore, the social and economic impacts of the Proposed Action are not interrelated with significant natural or physical environmental effects.

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

Response: The effects of the Proposed Action on the quality of human environment are not expected to be highly controversial. Implementation of the sectors was approved by a majority of the New England Fishery Management Council (NEFMC), and membership in a sector is voluntary. The Proposed Action would not modify rebuilding plans and specifications adopted by Amendment 16 and Framework 44, which are needed to rebuild groundfish stocks. 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 Magnuson-Stevens Act render these discussions moot. The Proposed Action is not expected to negatively impact habitat, allocated target species, non-allocated target species and bycatch, protected resources as described in Sections 5.1.2 through 5.1.4.

9. *Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, parkland, 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. There are no known parkland, prime farmlands, wetlands, or wild scenic rivers in the study area. 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. The trawl, gillnet, and hook and line gear used by Sustainable Harvest Sector are traditional gears used in the groundfish fishery. 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 effects of the Proposed Action on the human environment are not expected to be highly uncertain or involve unique or unknown risks. The Final Rule approving the 2010 Operations Plan would allocate ACE to Sustainable Harvest Sector, which sets a limit on the amount of each the 14 groundfish stocks that Sustainable Harvest Sector can catch, while minimizing regulatory discards, resulting in positive benefits to the allocated target species, non-allocated target species, and bycatch species. Sustainable Harvest Sector members would be exempt from several restrictions of the FMP, however, Sustainable Harvest Sector will primarily use trawl, gillnet, and hook and line gear and maintain traditional fishing practices which will have no greater impact on habitat, protected species, and limit bycatch species as compared to the common pool and the groundfish fishery before sectors (Sections 5.1.2 through 5.1.4). Implementation of the Final Rule would mitigate impacts of Amendment 13, Framework 42, and Amendment 16 to the NE Multispecies FMP on human communities by conveying environmental, social, and economic benefits directly to Sustainable Harvest Sector members and thereby to the communities of Newport and Point Judith Rhode Island; New Bedford, Boston, Gloucester, Provincetown, Hyannis, Chatham, Scituate Massachusetts; Portsmouth and Rye, New Hampshire; Portland, Cundy's Harbor, Biddeford Pool, Sebasco Harbor, and Rockland, Maine, while at the same time meeting the conservation requirements of the FMP. Sectors have been in operation in the New England groundfish fishery since 2004; therefore, the effects on the human environment are not uncertain or involve unique or unknown risks.

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

Response: The cumulative effects analysis presented in Section 5.2 of this document considers the impacts of the Proposed Action in combination with relevant past, present, and reasonably foreseeable future actions and concludes that no significant cumulative impacts are expected from the implementation of Sustainable Harvest Sector. The Proposed Action is related to Amendment 16 to the NE Multispecies FMP. The Record of Decision for Amendment 16 states the measures being implemented are the environmentally preferred alternatives and all means to avoid, minimize, or compensate for environmental harm have been adopted. Since none of the cumulative impacts of the Proposed Action are considered significant and the measures under Amendment 16 are environmentally preferred, Section 5.2 of this document concluded there are no significant cumulative impacts among these related actions. Further, the Proposed Action would not have any significant impacts when considered individually or in conjunction with any of the other actions presented in Section 5.2 (fishing related and non-fishing related).

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 fishing operations of the Proposed Action would take place on ocean waters and would not affect any human communities on the adjacent shorelines. There are no known districts, sites, or highways in the area of the Proposed Action. 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*. Due to the minimal impact on the human environment, the Sustainable Harvest Sector Operations Plan would adversely affect scientific, cultural, or historical resources.

13. *Can the proposed action reasonably be expected to result in the introduction or spread of a non-indigenous species?*

Response: No non-indigenous species would be introduced during the Proposed Action because operation of Sustainable Harvest Sector is confined to traditional fishing practices, and no non-indigenous species would be used or transported during the Sector's activities. Therefore, the Proposed Action would not be expected to result in the introduction or spread of a non-indigenous species.

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

Response: The NEFMC has authorized the formation of multiple sectors under Amendment 16 to the NE Multispecies FMP and has set forth criteria for establishing sectors in this action. The Proposed Action was initiated in response to Amendment 16 and does not set a precedent because it abides by the criteria set forth in that Amendment. However, it should be noted that while Amendment 16 established multiple sectors and the process of their allocation, each sector proposal and each Operations Plan and allocation is considered individually on its own merits and expected impacts, and includes a specified process for public comment and consideration. Further, each sector must submit their Operations Plan

annually for approval. Therefore, the Proposed Action is not likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration.

15. *Can the proposed action reasonably be expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment?*

Response: The Proposed Action is not expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment. In addition to the Sustainable Harvest Sector harvest rules, Sustainable Harvest Sector would comply with all local, regional, and national laws and permitting requirements.

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: The Proposed Action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species. As stated in Sections 5.1.2 and 5.1.3, impact on resources encompassing groundfish and other stocks is expected to be minimal.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting EA prepared for the approval of the FY 2010 Sustainable Harvest Sector Operations Plan, it is hereby determined that the approval of the FY 2010 Sustainable Harvest Sector Operations Plan will not significantly impact the quality of the human environment as described above and in the supporting EA. In addition, all beneficial and adverse impacts of the Proposed Action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an Environmental Impact Statement (EIS) for this action is not necessary.

Patricia A. Kurkul — Date: FEB 24, 2010

Patricia A. Kurkul
Regional Administrator Northeast Region, NMFS

8.5 ADMINISTRATIVE PROCEDURE ACT (APA)

Section 553 of the APA establishes procedural requirements applicable to 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, no abridgement of the rulemaking process for this action is being requested.

8.6 PAPERWORK REDUCTION ACT (PRA)

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. PRA for data collections relating to sectors will be considered and evaluated with Amendment 16 to the FMP. This action does not propose to modify any existing collections or to add any new collections; therefore, no review under the PRA is necessary for this action.

8.7 COASTAL ZONE MANAGEMENT ACT (CZMA)

Section 307(c)(1) of the CZMA requires that all Federal activities which affect any coastal use or resource be consistent with approved state coastal zone management programs (CZMP) to the maximum extent practicable. NMFS has reviewed the relevant enforceable policies of each coastal state in the NE region for this action and has determined that this action is incremental and repetitive, without any cumulative effects, and is consistent to the maximum extent practicable with the enforceable policies of the CZMP of the following states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, and North Carolina. NMFS finds this action to be consistent with the enforceable policies to manage, preserve, and protect the coastal natural resources, including fish and wildlife, and to provide recreational opportunities through public access to waters off the coastal areas. Pursuant to the general consistency determination provision codified at 15 CFR 930.36(c), NMFS sent a general consistency determination applying to the current NE Multispecies FMP, and all routine Federal actions carried out in accordance with the FMP, to the following states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, and North Carolina on October 21, 2009. In accordance with that determination, NMFS will send a letter advising those states of this action following the publication of the final rule.

8.8 INFORMATION QUALITY ACT (IQA)

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

Utility

The information presented in this EA 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.

This EA is the principal means by which the information contained herein is available to the public. The information provided in this EA is based on the most recent available information from the relevant data sources. The development of this EA and the decisions made by NMFS to propose this action are the result of a multi-stage public process.

The Federal Register notice that announces the proposed Sustainable Harvest Sector Operations Plan and Agreement is available in printed publication and on the NMFS NE Regional Office website. Instructions for obtaining a copy of this EA are included in the Federal Register notice.

Integrity

Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NMFS 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 United States Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity

For the purposes of the Pre-Dissemination Review, this EA 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 EFH Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the NEPA.

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 from the Northeast Fisheries Science Center. Landing information is based on information collected from the GARM III report. 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 EA were prepared using data from accepted sources, and the analyses have been reviewed by NOAA.

Despite current data limitations, the 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 fishing year, through FY 2007. The data used in the analyses provide the best available information on the state of each species regulated under the FMP (i.e., GARM III, September 2008), species and EFH data from NOAA, and fishery landings through FY 2007. 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 state of the regulated fisheries under the FMP, fishing techniques in the Sustainable Harvest Sector and the socio-economic impacts of the fisheries on impacted communities.

The policy choices are clearly articulated in Section 3 of this EA, 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 Sections 4 and 5 of this EA. All supporting materials, information, data, and analyses within this EA 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 EA involves the Northeast Fisheries Science Center, the Northeast Regional Office, and NMFS 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. 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 EA and clearance of any rules prepared to implement resulting regulations is conducted by staff at NMFS Headquarters, the Department of Commerce, and the United States Office of Management and Budget.

8.9 REGULATORY FLEXIBILITY ACT (RFA)

The RFA requires agencies to assess the impacts of their proposed regulations on small entities. The Regulatory Flexibility Act Analysis (RFAA) determines whether the Proposed Action would have a significant economic impact on a substantial number of small entities. The SBA size standards define whether a business entity is small and, thus, eligible for Government programs and preferences reserved for "small business" concerns. Size standards have been established for all for-profit economic activities or industries in the North American Industry Classification System (NAICS). The SBA defines a small business in the commercial fishing and recreational fishing sector, as a firm with receipts (gross revenues) of up to $4 million.

This section provides an assessment and discussion of the potential economic impacts of the Proposed Action, as required of the RFA. The objective of the RFA is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. The Final Regulatory Flexibility Analysis (FRFA) must identify the number and types of businesses that would be regulated, indicate how many of these entities are small businesses, explain the expected economic impact of the regulation on small businesses, and describe any feasible alternatives that would minimize the economic impacts. The number of regulated entities for this action was 812 permits as of the January 22, 2010, deadline for permit holders to join a sector and at the time this FRFA was completed. The economic impact resulting from this action on these small entities is positive since the action would mitigate the disproportionate negative impacts to non-sector vessels proposed in Amendment 16.

Description of the Reasons Why Action by Agency is Being Considered

The flexibility afforded to sectors includes exemptions from certain specified regulations as well as the ability to request additional exemptions. Sector members will no longer have groundfish catch limited by DAS allocations and trip limits and will instead be limited by their available ACE. In this manner the economic incentive changes from maximizing the value of throughput of all species on a DAS to maximizing the value of the sector ACE. This change places a premium on timing of landings to market conditions as well as changes in the selectivity and composition of species landed on fishing trips. Further description of the purpose and need for the ACEs is contained in Sections 2.1 and 2.2.

The Objectives and Legal Basis for the Proposed Action

The objective of the Proposed Action is to authorize the operation of the Sustainable Harvest Sector in FY 2010, and to allow the benefits of sector operations to accrue to 129 proposed permits and the New England communities where they dock and land. The legal basis for the Proposed Action is the NE Multispecies FMP and promulgating regulations at 50 CFR § 648.87.

Estimate of the Number of Small Entities

Under the SBA size standards for small fishing entities ($4 million), all permitted and participating vessels in the groundfish fishery are considered to be small fishing entities. Gross sales by any one entity (vessel) do not exceed this threshold. The maximum number of entities that could be affected by the proposed ACEs is 1,477 permits: the number of vessels in New England with eligible limited access multispecies permits. The number of permits who anticipate participating in the Sustainable Harvest Sector in FY 2010 is 129. Permit holders have until April 30, 2010, to withdraw from a sector and fish in the common pool.

Reporting, Recordkeeping and Other Compliance Requirements

Data collections relating to sectors are considered and evaluated with Amendment 16 to the FMP. This action does not propose to modify any existing collections or to add any new collections.

Duplication, Overlap or Conflict with other Federal Rules

The Proposed Action is authorized in Amendment 16 to the NE Multispecies FMP. It does not duplicate, overlap, or conflict with other Federal rules.

Alternatives which Minimize any Significant Economic Impact of Proposed Action on Small Entities

The Proposed Action would create a positive economic impact for the participating sector vessels because it would mitigate the negative impacts under Amendment 16. Little quantitative data on the precise economic impacts is available because sector management is relatively new to New England groundfish management. It is anticipated that switching from effort controls of the current management regime to operating under a sector ACE, sector members would remain economically viable while adjusting to changing economic and fishing conditions. Thus, the Proposed Action provides benefits to sector members that they would not have under the No Action Alternative.

Economic Impacts on Small Entities Resulting from Proposed Action

The EIS for Amendment 16 compares economic impacts of sector vessels with common pool vessels and analyzes costs and benefits of the universal exemptions. This rule provides further discussion on economic impacts of additional exemptions requested by sectors.

Several additional exemptions requested by the Sustainable Harvest Sector could provide economic incentives to enroll in the sector. All exemptions are requested by the sector to generate positive social and economic effects, to sector members and ports.

The Sustainable Harvest Sector has requested an exemption from the Day gillnet 120-day block requirement out of the fishery. Existing regulations require that vessels using gillnet gear remove all gear from the water for 120 days. Since the time out is up to the vessel owner to decide, to provide for sustained fishing income many affected vessel owners have purchased more than one vessel that may be used while the other is taking its 120-day block out of the groundfish fishery. Acquiring a second vessel brings the additional expense of outfitting another vessel with gear. The exemption from the 120-day block would allow sector members to realize the cost savings associated with retiring the redundant vessel.

The Sustainable Harvest Sector is requesting exemption from the 20-day spawning block requirement out of the fishery. Exemption from the 20-day spawning block would improve flexibility to make trip planning decisions according to existing fishing and market conditions. Although vessel owners currently have the flexibility to schedule their 20-day block according to business needs and may use that opportunity to perform routine or scheduled maintenance, vessel owners may prefer to schedule these activities at other times of the year or may have unexpected repairs. Removing this requirement may not be expected to have a significant impact but would still provide vessel owners with greater opportunity to make more efficient use of their vessel.

The Sustainable Harvest Sector also requests an exemption from the limit on the number of nets that may be deployed by Day gillnet vessels. This would provide greater flexibility to deploy fishing gear

by participating sector members according to operational and market needs. Note that the requested exemption is limited in that no more than 150 nets could be deployed by any one vessel.

The Sustainable Harvest Sector and Tri-State Sector request exemptions from regulations that currently limit leasing of DAS to vessels within specified length and horsepower restrictions. These restrictions create a system in which a small vessel may lease DAS from virtually any other vessel, but is limited in the number of vessels that small vessels may lease to. The opposite is true for larger vessels. Exemption from these restrictions would allow greater flexibility to lease or move DAS across different fishing platforms and vessel sizes. The efficiency gains of doing so are uncertain and may be limited since the exemption would only apply to Tri State Sector and Sustainable Harvest Sector members. Since DAS would not be required while fishing for groundfish, the economic importance of this exemption would be associated with the ability to fish for and/or retain skates and monkfish at levels above the incidental catch level.

Other Significant Alternatives

There was one exemption requested by the Sustainable Harvest Sector that NMFS has considered, but rejected, for FY 2010.

In addition to the universal rolling closure exemptions as described in Section 4.2.3.9 of Amendment 16, the Sustainable Harvest Sector requested an additional exemption from GOM Rolling Closure Areas: statistical block 138 in May. The NEFMC voted to exempt sectors from the GOM Rolling Closure Areas, with the exception of portions that the NEFMC believes should remain closed to protect cod spawning aggregations. However, at its November 2009, meeting, the NEFMC endorsed the Sustainable Harvest Sector's request for an exemption to the rolling closure for block 138. Exempting sector vessels from additional rolling closures beyond the universal exemptions proposed by the NEFMC in Amendment 16 could have improved profitability, since higher catch rates would mean that the same amount of groundfish could be caught at a lower cost.

9.0 REFERENCES

Aguilar, A. 2002. Fin whale, *Balaenoptera physalus*. Pages 435-438 *in* W.F. Perrin, B. Würsig, and J.G.M. Thewissen (eds.). Encyclopedia of Marine Mammals. San Diego: Academic Press.

Banner, D. 2005. Boston History: The history of Boston, Massachusetts. Available at: http://searchboston.com/articles/history.html.

Best, P.B., J.L. Bannister, R.L. Brownell, Jr., and G.P. Donovan, eds. 2001. Right whales: worldwide status. J. Cetacean Res. Manage. (Special Issue) 2. 309pp.

Boston Harbor Association (BHA). 2004. Working Port Advocacy and Education. Available at: http://www.tbha.org/programs_workingport.htm.

Boston Harbor Association (BHA). No Date. South Boston, Fish Pier. Available at: http://www.bostonharborwalk.com/placestogo.

Braun-McNeill, J., and S.P. Epperly. 2004. Spatial and temporal distribution of sea turtles in the western North Atlantic and the U.S. Gulf of Mexico from Marine Recreational Fishery Statistics Survey (MRFSS). Mar. Fish. Rev. 64(4):50-56.

Carr, H.A. and H.O. Milliken. 1998. Conservation engineering: options to minimize fishing's impacts to the sea floor. Pp. 100–103 *in* E.M. Dorsey and J. Pederson, eds. Effects of Fishing Gear on the Sea Floor of New England. Conservation Law Foundation, Boston, MA. 160 pp.

Cetacean and Turtle Assessment Program (CeTAP). 1982. A characterization of marine mammals and turtles in the mid- and north Atlantic areas of the U.S. outer continental shelf. Cetacean and Turtle Assessment Program, University of Rhode Island. Final Report #AA551-CT8-48 to the Bureau of Land Management, Washington, DC, 538 pp.

City of Newport. No Date. The City of Newport, Rhode Island. Available at: http://www.cityofnewport.com/.

Clapham, P.J., S.B. Young, and R.L. Brownell. 1999. Baleen whales: Conservation issues and the status of the most endangered populations. Mammal Rev. 29(1):35-60.

Clapham. P. 2002. Humpback whale, *Megaptera novaeangliae*. Pages 589-592 *in* W.F. Perrin, B. Würsig, and J.G.M. Thewissen, eds. Encyclopedia of Marine Mammals. San Diego: Academic Press.

Clark, S.H., ed. 1998. Status of fishery resources off the Northeastern United States for 1998. NOAA Tech. Memo. NMFS-NE-115. 149p. Profiles available online at: http://www.nefsc.noaa.gov/sos/.

Colvocoresses, J.A. and J.A. Musick. 1984. Species associations and community composition of Middle Atlantic Bight continental shelf demersal fishes. Fish. Bull. (U.S.) 82: 295-313.

Copes, P. and A. Charles. 2004. Socioeconomics of individual transferable quotas and community-based fishery management. Agricultural and Resource Economics Review 33(2):171-181.

Gabriel, W. 1992. Persistence of demersal fish assemblages between Cape Hatteras and Nova Scotia, northwest Atlantic. J. Northwest Atl. Fish. Sci. 14: 29-46.

Hall-Arber M., C. Dyer, J. Poggie, J. McNally, R. Gagne. 2001. New England's Fishing Communities. Cambridge (MA): MIT Sea Grant 01-15. Available at: http://seagrant.mit.edu/cmss/.

Hanson J, Helvey M, Strach R. editors. 2003. Non-fishing impacts to essential fish habitat and recommended conservation measures. Long Beach (CA): National Marine Fisheries Service (NOAA Fisheries) Southwest Region. Version 1. 75 p.

Hayes, M.L. 1983. Active fish capture methods *in* Nielson, L.A.; Johnson, D.L., eds. Fisheries techniques. Bethesda, MD: Am. Fish. Soc.; p. 123-145.

Historical Reference Center. 1997. Plymouth: Its History and People. Available at: http://pilgrims.net/plymouth/history/index.htm.

Horwood, J. 2002. Sei whale, *Balaenoptera borealis*. Pages 1069-1071 in W.F. Perrin, B. Würsig, and J.G.M. Thewissen, eds. Encyclopedia of Marine Mammals. San Diego: Academic Press.

International Council for the Exploration of the Sea (ICES). 2000. Report of the ICES Advisory Committee on the Marine Environment (ACME) 2000. Cooperative Research Report No. 241, 27 pp.

James, M.C., R.A. Myers, and C.A. Ottenmeyer. 2005. Behaviour of leatherback sea turtles, *Dermochelys coriacea*, during the migratory cycle. Proc. R. Soc. B, 272: 1547-1555.

Johnson M.R., C. Boelke, L.A. Chiarella, P.D. Colosi, K. Greene, K. Lellis, and H. Ludemann, M. Ludwig, S. McDermott, J. Ortiz, D. Rusanowsky, M. Scott, J. Smith 2008. Impacts to marine fisheries habitat from nonfishing activities in the Northeastern United States. http://www.nefsc.noaa.gov/publications/tm/tm209/index.html

Katona, S.K., V. Rough, and D.T. Richardson. 1993. A field guide to whales, porpoises, and seals from Cape Cod to Newfoundland. Smithsonian Institution Press, Washington, D.C. 316 pp.

Keinath, J.A., J.A. Musick, and R.A. Byles. 1987. Aspects of the biology of Virginia's sea turtles: 1979-1986. Virginia J. Sci. 38(4): 329-336.

Kenney, R.D. 2002. North Atlantic, North Pacific, and Southern hemisphere right whales in W.F. Perrin, B. Wursig, and J.G.M. Thewissen, eds., Encyclopedia of Marine Mammals. Academic Press, CA. pp. 806-813.

Kocik, J.F., and T.F. Sheehan. 2006. Atlantic Salmon. Available online at: http://www.nefsc.noaa.gov/sos/spsyn/af/salmon/.

Lacroix G. L., D. Knox, and M. J. W. Stokesbury. 2005. Survival and behaviour of postsmolt Atlantic salmon in coastal habitat with extreme tides. Journal of Fish Biology 66(2): 485-498.

Leatherback Turtle Expert Working Group (TEWG). 2007. An assessment of the leatherback turtle population in the Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-555. 116 pp.

Lindeboom, H.J., and S.J. de Groot. 1998. Impact II. The effects of different types of fisheries on the North Sea and Irish Sea benthic ecosystems. NIOZ Rapport 1998-1. 404 p.

Lovestead, BG. 1997. Historic People and Events, a Tale of Two Bostons. Available at: http://www.iboston.org.

MapQuest. 2006. MapQuest Homepage. Available at: http://www.mapquest.com/.

MapQuest. 2007. MapQuest Homepage. Available at: http://www.mapquest.com.

Mayo, R.K. and M. Terceiro, eds. 2005. Assessment of 19 Northeast groundfish stocks through 2004. 2005 Groundfish Assessment Review Meeting (2005 GARM), Northeast Fisheries Science Center, Woods Hole, Massachusetts, 15-19 August 2005. U.S. Dep. Commer., Northeast Fish. Sci. Cent. Ref. Doc. 05-13; 499 p.

Mid-Atlantic Fisheries Management Council (MAFMC), 2009. Spiny Dogfish Specifications, Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis. April 9.

Mirarchi, F. 1998. Bottom trawling on soft substrates *in* E.M. Dorsey; J. Pederson, eds. Effects of fishing gear on the sea floor of New England. Conservation Law Foundation, Boston, MA.

Monroe, JW. No Date. Seeking the Port in Portland. Available at: http://www.oceangatewaymaine.org/.

Morgan, L.E. and R. Chuenpagdee. 2003. Shifting gears: assessing the collateral impacts of fishing methods in U.S. waters. Pew Science Series on Conservation and the Environment, 42 p.

Morreale, S.J. and E.A. Standora. 1998. Early life stage ecology of sea turtles in northeastern U.S. waters. U.S. Dep. Commer. NOAA Tech. Mem. NMFS-SEFSC-413, 49 pp.

Morreale, S.J. and E.A. Standora. 2005. Western North Atlantic waters: Crucial developmental habitat for Kemp's ridley and loggerhead sea turtles. Chel. Conserv. Biol. 4(4):872-882.

Murray, K.T. 2006. Estimated average annual by-catch of Loggerhead Sea Turtles (Caretta caretta) in U.S. Mid-Atlantic bottom otter trawl gear, 1996-2004. U.S. Dep. Commer., Northeast Fish. Sci. Cent. Ref. Doc. 06-19; 26 p.

Musick, J.A. and C.J. Limpus. 1997. Habitat utilization and migration in juvenile sea turtles. Pp. 137-164 *in* Lutz, P.L., and J.A. Musick, eds. The Biology of Sea Turtles. CRC Press, New York. 432 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1991a. Recovery plan for U.S. population of loggerhead turtle. National Marine Fisheries Service, Washington, D.C. 64 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1991b. Recovery plan for U.S. population of Atlantic green turtle. National Marine Fisheries Service, Washington, D.C. 58 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1992. Recovery plan for leatherback turtles in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C. 65 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 1995. Status reviews for sea turtles listed under the Endangered Species Act of 1973. National Marine Fisheries Service, Silver Spring, MD. 139 pp.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007a. Loggerhead sea turtle (/Caretta caretta/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 65 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007b. Leatherback sea turtle (/Dermochelys coriacea/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 79 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007c. Kemp's ridley sea turtle/ (Lepidochelys/ /kempii/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 50 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). 2007d. Green sea turtle (/Chelonia mydas/) 5 year review: summary and evaluation. National Marine Fisheries Service, Silver Spring, Maryland. 102 pp. Available at: http://www.nmfs.noaa.gov/pr/listing/reviews.htm.

National Marine Fisheries Service (NMFS) Southeast Fisheries Science Center (SEFSC). 2001. Stock assessments of loggerheads and leatherback sea turtles and an assessment of the impact of the pelagic longline fishery on the loggerhead and leatherback sea turtles of the Western North Atlantic. U.S.

National Marine Fisheries Service (NMFS). 1991. Final recovery plan for the humpback whale (*Megaptera novaeangliae*). Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 105 pp.

National Marine Fisheries Service (NMFS). 1998. Recovery Plan for the Shortnose Sturgeon (*Acipenser brevirostrum*). Prepared by the Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, Silver Spring, Maryland. 104 pages.

National Marine Fisheries Service (NMFS). 2005. Recovery Plan for the North Atlantic right whale (*Eubalaena glacialis*). National Marine Fisheries Service, Silver Spring, MD. 137pp.

National Marine Fisheries Service (NMFS). 2009a. Hawksbill Turtle *(Eretmochelys imbricata).* Available at: http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.htm.

National Marine Fisheries Service (NMFS). 2009b. List of Fisheries for 2010. 50 CFR 229, Vol. 74, No. 219.

National Marine Fisheries Service (NMFS). 2009c. Correspondence between ENTRIX, Inc and the Northeast Fisheries Science Center regarding impacts to sea turtles from fishing gear.

National Marine Fisheries Service (NMFS). 2009d. Minimum Mesh Size Restrictions and Rationale for Management Measures.

National Oceanic and Atmospheric Administration (NOAA). 2003. Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs, December 2003

National Oceanic and Atmospheric Administration (NOAA). 2007. Status of Fishery Resources off the Northeastern US Aggregate Resource and Landings Trends. Available at: http://www.nefsc.noaa.gov/sos/agtt/.

National Oceanic and Atmospheric Administration (NOAA). 2009a. Small Entity Compliance Guide. June 24, 2009.

National Oceanic and Atmospheric Administration (NOAA). 2009b. NMFS Northeast Multispecies Preliminary Fisheries Statistics Reports. Available at: http://www.nero.noaa.gov/ro/fso/mul.htm.

National Research Council (NRC). 1990. Decline of the Sea Turtles: Causes and Prevention. Committee on Sea Turtle Conservation. Natl. Academy Press, Washington, D.C. 259 pp.

National Research Council (NRC). 2002. Effects of trawling and dredging on seafloor habitat. Ocean Studies Board, Division on Earth and Life Studies, National Research Council. National Academy Press, Washington, D.C. 126 p.

New England Fishery Management Council (NEFMC) and Mid-Atlantic Fishery Management Council (MAFMC). 2003. Framework adjustment 2 to the monkfish fishery management plan. 97 pp. with Appendixes. Available at: http://www.nefmc.org/monk/index.html.

New England Fishery Management Council (NEFMC) and Mid-Atlantic Fishery Management Council (MAFMC). 1998. Monkfish Fishery Management Plan. Available at: http://www.nefmc.org/monk/index.html.

New England Fishery Management Council (NEFMC). 2003. Final Amendment 13 to the Northeast multispecies fishery management plan including a final supplemental environmental impact statement and an initial regulatory flexibility analysis. Vols. I & II. Newburyport, MA: New Engl. Fish. Manage. Council.

New England Fishery Management Council (NEFMC). 2007. Groundfish Oversight Committee Meeting Summary, May 31, 2007.

New England Fishery Management Council (NEFMC). 2009a. Final Amendment 16 to the Northeast multispecies fishery management plan including a final environmental impact statement with an initial regulatory flexibility act analysis. Newburyport, MA: New Engl. Fish. Manage. Council. Available at: http://www.nefmc.org/nemulti.

New England Fishery Management Council (NEFMC). 2009b. Final Amendment 3 to the fishery management plan (FMP) for the northeast skate complex and final environmental impact statement with an initial regulatory flexibility act analysis (FEIS). Prepared by the New England Fishery Management Council in consultation with National Marine Fisheries Service. November 30, 2009. 459 pp. Available at: National Marine Fisheries Service, 166 Water Street, Woods Hole MA 02543-1026.

Northeast Data Poor Stocks Working Group. 2007. Monkfish assessment summary for 2007. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 07-13; 12 p. Available at: National Marine Fisheries Service, 166 Water Street, Woods Hole MA 02543-1026.

Northeast Fisheries Science Center (NEFSC). 2002. Workshop on the effects of fishing gear on marine habitats off the northeastern United States, October 23-25, 2001, Boston, Massachusetts. U.S. Natl. Mar. Fish. Serv. Northeast Fish. Cent. Woods Hole Lab. Ref. Doc. 02-01. 86 p.

Northeast Fisheries Science Center (NEFSC). 2006a. Report of the 43rd Northeast Regional Stock Assessment Workshop (43rd SAW): 43rd SAW assessment summary report. NEFSC Reference Document 06-14. 46 p.

Northeast Fisheries Science Center (NEFSC). 2006b. Status of Fishery Resources off the Northeastern US NEFSC - Resource Evaluation and Assessment Division, Spiny dogfish (Squalus acanthias), by Katherine Sosebee and Paul Rago. Revised December 2006.

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

Northeast Fisheries Science Center (NEFSC). 2009. Community Profiles for the Northeast US Fisheries. Available at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

Northeast Region Essential Fish Habitat Steering Committee (NREFHSC). 2002. Workshop on the effects of fishing gear on marine habitats off the Northeastern United States, October 23-25, 2001. Northeast Fisheries Science Center Reference Document 02-01. 86 p. National Marine Fisheries Service, NOAA, 166 Water Street, Woods Hole, MA 02543-1026.

Overholtz, W.J. and A.V. Tyler. 1985. Long-term responses of the demersal fish assemblages of Georges Bank. Fish. Bull. (U.S.) 83: 507-520.

Perrin, W.F., B. Wursig, and J.G.M. Thewissen, eds. 2002. Encyclopedia of Marine Mammals. Academic Press, CA. 1414 pp.

Perry, S.L., D.P. DeMaster, and G.K. Silber. 1999. The great whales: History and status of six species listed as endangered under the U.S. Endangered Species Act of 1973. Mar. Fish. Rev. Special Edition. 61(1): 59-74.

Plymouth Area Chamber of Commerce. 2007. The Plymouth Area Chamber of Commerce. Available at: http://www.plymouthchamber.com/.

Portsmouth Naval Shipyard (PNS). No Date. History. Available at: http://www.ports.navy.mil/.

Pratt, S. 1973. Benthic fauna *in* Coastal and offshore environmental inventory, Cape Hatteras to Nantucket Shoals. p. 5-1 to 5-70. Univ. Rhode Island, Mar. Pub. Ser. No. 2. Kingston, RI.

Rhode Island Economic Development Corporation (RIEDC). 2008. Data and Publications: State and Community Profiles. Available at: http://www.riedc.com/.

Sanchirico, James N., Daniel Holland, Kathryn Quigley, and Mark Fina. 2006. Catch-quota balancing in multispecies individual fishing quotas. Marine Policy 30: 767-785.

Sainsbury, J. C. 1996. Commercial fishing methods: an introduction to vessels and gears, Fishing News Books, Third Edition.

Sanchiroco, J.N., D. Holland, K. Quigley, and M. Fina. 2006. Catch-quota balancing in multispecies individual fishing quotas. Marine Policy 30:767-785.

Sheehan E. and H. Copperthwaite. 2002. Preserving Commercial Fishing Access: A Study of Working Waterfronts in 25 Maine Communities. Coastal Enterprises Inc and Maine Coastal Program; 35 p. Available at: http://www.state.me.us/mcp/.

Sherman, K., N.A. Jaworski, T.J. Smayda, eds. 1996. The northeast shelf ecosystem – assessment, sustainability, and management. Blackwell Science, Cambridge, MA. 564 p.

Shoop, C.R. and R.D. Kenney. 1992. Seasonal distributions and abundance of loggerhead and leatherback sea turtles in waters of the northeastern United States. Herpetol. Monogr. 6: 43-67.

Sosebee, K., A. Applegate, E. Brooks, T. Gedamke, and M. Traver. 2008. Skate Species Complex: Examination of Potential Biological Reference Points for the Northeast Region. Report prepared for the Northeast Data Poor Stocks Working Group Meeting, Woods Hole, MA, December 8-12, 2008. 18 pp. Available at: http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0902/Skates/Skate%20Complex%20Text.pdf.

State of Massachusetts. 2002. Coastal Zone Management. New Bedford/Fairhaven Harbor Dredged Material Management Plan (DMMP). Available at: http://www.mass.gov/czm/nb_dmmp_deir.htm.

State of Massachusetts. 2006. New Bedford, Bristol County, Massachusetts, DHCD Community Profiles. Available at: http://mass.gov.

State of Massachusetts. 2007. DHCD Community Profiles. Available at: http://mass.gov.

State of New Hampshire Division of Historical Resources (DHR). 2006. New Hampshire Historical Markers. Available at: http://www.nh.gov/nhdhr/markers/.

Steimle, F.W. and C. Zetlin. 2000. Reef habitats in the middle Atlantic bight: abundance, distribution, associated biological communities, and fishery resource use. Mar. Fish. Rev. 62: 24-42.

Stevenson, D., L. Chiarella, D. Stephan, R. Reid, K. Wilhelm, J. McCarthy, and M. Pentony. 2004. Characterization of the fishing practices and marine benthic ecosystems of the northeast U.S. shelf, and an evaluation of the potential effects of fishing on essential fish habitat. NOAA Tech. Memo. NMFS-NE-181. 179 p.

Swingle, W.M., S.G. Barco, T.D. Pitchford, W.A. McLellan, and D.A. Pabst. 1993. Appearance of juvenile humpback whales feeding in the nearshore waters of Virginia. Mar. Mamm. Sci. 9: 309-315.

Theroux, R.B. and M.D. Grosslein. 1987. Benthic fauna *in* R.H. Backus and D.W. Bourne, eds. Georges Bank. p. 283-295. MIT Press, Cambridge, MA.

Theroux, R.B. and R.L. Wigley. 1998. Quantitative composition and distribution of the macrobenthic invertebrate fauna of the continental shelf ecosystems of the northeastern United States. NOAA Tech. Rep. NMFS 140. 240 p.

Trust for Public Land (TPL). 2007. Help keep Holbrook's Wharf working. Available at: http://www.tpl.org/.

Turtle Expert Working Group (TEWG). 1998. An assessment of the Kemp's ridley (*Lepidochelys kempii*) and loggerhead (*Caretta caretta*) sea turtle populations in the Western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-409. 96 pp.

Turtle Expert Working Group (TEWG). 2000. Assessment update for the Kemp's ridley and loggerhead sea turtle populations in the Western North Atlantic. U.S. Dep. Commer. NOAA Tech. Mem. NMFS-SEFSC-444. 115 pp.

Turtle Expert Working Group (TEWG). 2009. An Assessment of the Loggerhead Turtle Population in the Western North Atlantic Ocean. NOAA Tech. Memo. NMFS-SEFSC.575. 131 pp.

US Geological Survey (USGS). 2008. US Board on Geographic Names: Geographic Names Information System (GNIS). Available at: http://geonames.usgs.gov/pls/gnispublic/.

USGenNet. 2006. Greater New Bedford Area. Available at: http://www.usgennet.org/usa/ma/county/bristol/newbedford/greatnewbed.htm.

Valentine, P.C. and R.G. Lough. 1991. The seafloor environment and the fishery of eastern Georges Bank. U.S. Dep. Interior, U.S. Geol. Sur. Open File Rep. 91-439. 25 p.

Wallace, R.S. 2006. New Hampshire historical markers - New Hampshire history in brief. Available at: http://www.state.nh.us/markers/brief.html.

Waring, G.T., D.L. Palka, P.J. Clapham, S. Swartz, M. Rossman, T. Cole, L.J. Hansen, K.D. Bisack, K. Mullin, R.S. Wells, D.K. Odell, and N.B. Barros. 1999. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 1999. NOAA Technical Memorandum NMFS-NE-153.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh, and K. Maze-Foley, eds. 2006. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2005. NOAA Technical Memorandum NMFS-NE-194. Available at : http://www.nmfs.noaa.gov/pr/sars/region.htm.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh, and K. Maze-Foley, eds. 2007. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments - 2006 (2nd edition). NOAA Technical Memorandum NMFS-NE-201. Available at : http://www.nmfs.noaa.gov/pr/sars/region.htm.

Waring, G.T., E. Josephson, C.P. Fairfield-Walsh, and K. Maze-Foley, eds. 2009. Draft U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2009. Available at: http://www.nmfs.noaa.gov/pr/sars/draft.htm.

Waring, G.T., J.M. Quintal, S.L. Swartz, eds. 2002. Draft U.S. Atlantic and Gulf of Mexico marine mammal stock assessments - 2001. NOAA Technical Memorandum NMFS-NE-169.

Watling, L. 1998. Benthic fauna of soft substrates in the Gulf of Maine *in* E.M. Dorsey and J. Pederson, eds. Effects of fishing gear on the seafloor of New England. p. 20-29. MIT Sea Grant Pub. 98-4.

Whitehead, H. 2002. Estimates of the Current Global Population Size and Historical Trajectory for Sperm Whales. Mar. Ecol. Prog. Ser. 242: 295-304.

Wiley, D.N., R.A. Asmutis, T.D. Pitchford, and D.P. Gannon. 1995. Stranding and mortality of humpback whales, *Megaptera novaengliae*, in the mid-Atlantic and southeast United States, 1985-1992. Fish. Bull. (U.S.) 93:196-205.

Williamson, J. 1998. Gillnet fishing *in* E.M. Dorsey, J. Pederson, eds. Effects of fishing gear on the sea floor of New England. MIT Sea Grant Pub. 98-4:87-89.