



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.

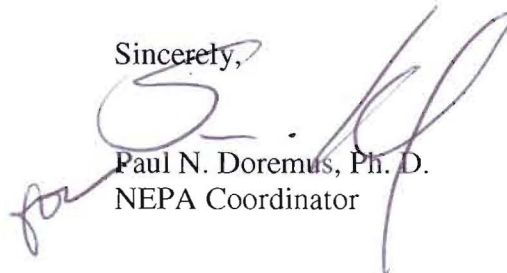
RESPONSIBLE

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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 (FONSI), 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,


Paul N. Doremus, Ph. D.
NEPA Coordinator

Enclosure



Georges Bank Cod Fixed Gear Sector

A Final Environmental Assessment

Prepared by:

*Georges Bank Cod Fixed Gear 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 Limits |
| ALWTRP | Atlantic Large Whale Take Reduction Plan |
| AM | Accountability Measures |
| 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 |
| CCCHFA | Cape Cod Commercial Hook Fishermen's Association |
| CEA | Cumulative Effects Assessment |
| CeTAP | Cetacean and Turtle Assessment Program |
| CEQ | Council on Environmental Quality |
| CLF | Conservation Law Foundation |
| cm | Centimeters |
| CPH | Confirmation of permit history |
| 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 |
| DSEIS | Draft Supplemental Environmental Impact Statement |
| EA | Environmental Assessment |
| EEZ | exclusive economic zone |
| EFH | essential fish habitat |
| EIS | Environmental Impact Statement |

| | |
|-------------------|--|
| EFH | Essential Fish Habitat |
| ESA | Endangered Species Act |
| F | Fishing mortality rate |
| FEIS | Final Environmental Impact Statement |
| Fixed Gear Sector | Georges Bank Cod Fixed Gear Sector |
| FMP | fishery management plan |
| F_{MSY} | fishing mortality rate that produces the maximum sustainable yield |
| FSEIS | Final Supplemental Environmental Impact Statement |
| FW | Framework |
| FY | fishing year |
| GARM | Groundfish Assessment Review Meeting |
| GB | Georges Bank |
| GOM/BOF | Gulf of Maine/Bay of Fundy |
| GOM | Gulf of Maine |
| HAPC | habitat area of particular concern |
| HPTRP | Harbor Porpoise Take Reduction Plan |
| ICES | International Council for Exploration of the Sea |
| IFQ | individual fishing quota |
| IQA | Information Quality Act |
| kg | Kilogram |
| km | Kilometer |
| lbs | pounds |
| LOF | List of Fisheries |
| m | meter |
| mm | millimeters |
| MAFAC | Marine Fisheries Advisory Committee |
| MAFMC | Mid-Atlantic Fishery Management Council |
| MEY | maximum economic yield |
| MMC | Multispecies Monitoring Committee |
| MMPA | Marine Mammal Protection Act |

| | |
|-------|---|
| MSY | maximum sustainable yield |
| mt | metric tons |
| NAICS | North American Industry Classification System |
| NAO | NOAA Administrative Order |
| NE | Northeast |
| NEFMC | New England Fishery Management Council |
| NEFSC | Northeast Fisheries Science Center |
| NEPA | National Environmental Policy Act |
| NRC | National Research Council |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NOI | Notice of Intent |
| NT | net tonnage |
| OLE | Office for Law Enforcement (NMFS) |
| OMB | Office of Management and Budget |
| PBR | Potential Biological Removal |
| PSC | Potential Sector Contribution |
| PRA | Paperwork Reduction Act |
| 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 |
| SARC | Stock Assessment Review Committee |
| SAW | Stock Assessment Workshop |
| SEFSC | NMFS Southeast Fisheries Science Center |
| SEIS | Supplemental Environmental Impact Statement |
| SFA | Sustainable Fisheries Act |
| 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) |
| WNA | western North Atlantic |

1.0 INTRODUCTION

The Georges Bank Cod Fixed Gear Sector (Fixed Gear Sector) has submitted the Fixed Gear Sector Operations Plan, and requests an annual catch entitlement (ACE) of all regulated groundfish authorized by Amendment 16 to the Northeast Multispecies Fishery Management Plan (FMP), for fishing year (FY) 2010. This Environmental Assessment (EA) was prepared in accordance with Amendment 16 and the National Environmental Policy Act (NEPA). The initial Sector allocation proposal for the Fixed Gear Sector was submitted under Framework (FW) 42 to the Northeast Multispecies FMP and was originally implemented in November 2006. The Fixed Gear Sector Operations Plan has previously been approved for FYs 2006, 2007, 2008, and 2009.

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 may participate (NEFMC 2009a).

The Fixed Gear Sector was established to protect regional groundfish populations while addressing local social and economic needs. By collectively adhering to strict fishing limits and achieving exemptions from some regulatory requirements, Fixed Gear Sector members would be able to maintain more profitable fishing businesses and protection for their fishing communities while managing groundfish populations for the future.

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 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 are currently 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 Atlantic wolffish. Three other species—silver hake (whiting), red hake, and offshore hake—are managed under a separate small-mesh multispecies program pursuant to Amendment 12 to 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. The 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 CFR 22906, April 27, 2004) specified a process for the formation of sectors within the Northeast multispecies fishery and for the allocation of total allowable catch¹ (TAC) for a specific groundfish species or for DAS. This rule also authorized and implemented the first sector, the Georges Bank Cod Hook Sector; established the Georges Bank Cod Hook Sector Operating Area; specified a formula for the allocation of GB cod TAC to future sectors; and implemented restrictions that apply to all sectors.

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.

Under the sector process, a self-selected group of three or more limited-access groundfish permit holders may agree to form a sector and submit a binding operations plan for management of that sector's allocation of catch. The Council may allocate an approved sector an unlimited percent of a stock's ACL based on the Members' PSCs. Approved sectors are subject to general requirements specified in the regulations as well as any specific requirement for that sector implemented through the framework action approving such sector (NMFS 2004). Sectors are intended to allow local fishery management, monitoring, and oversight of the multispecies complex of groundfish while complying with fishing regulations and the fishery stock rebuilding provisions of the Sustainable Fisheries Act (SFA) amendment to the Magnuson-Stevens Act.

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.

In November 2006, FW 42 to the Northeast Multispecies FMP authorized the second sector, the Fixed Gear Sector. In accordance with Amendments 13 and 16, and subsequent framework adjustments, sectors must annually submit an operations plan and sector contract to the Regional Administrator for approval for the sector to be allocated ACEs of the regulated groundfish species as authorized by Amendment 16. The operations plan and sector contract must contain certain elements, including but not limited to a contract signed by all sector participants, a detailed plan to show how the sector would monitor and enforce its ACEs, and a plan containing the management rules that the sector participants agree to abide by to avoid exceeding the allocated ACE. An analysis of the environmental impacts of the Fixed Gear Sector's proposed operation and harvest rules is required to comply with NEPA. The present document is an EA of the Fixed Gear Sector's proposed operation and harvest rules in compliance with NEPA.

The cumulative effects of Amendment 13, subsequent frameworks (FW 40a, 40b, 41, and 42), and Amendment 16 have resulted in DAS cuts, decreased trip limits, and differential DAS counting with the goal of rebuilding stocks and reducing fishing mortality. According to the most recent Groundfish Assessment Review Meeting data (GARM III), reductions in fishing mortality have occurred for some stocks since 2004, but exploitation of these stocks remains above F_{MSY} (F_{MSY} = fishing mortality rate that would produce maximum sustainable yield). A comparison of fishing mortality and biomass levels (relative to their biological reference points) can be found in the GARM III report (NEFSC 2008). This report indicates that moderate to large declines in fishing mortality occurred for the three yellowtail stocks, as well as for GB winter flounder, white hake, and plaice. Declines that are more modest were observed for the GB and GOM cod stocks and for GB haddock. Fishing mortality of GOM haddock increased slightly. However, moderate to large relative increases in fishing mortality occurred for witch flounder, GOM winter flounder, southern New England/Mid-Atlantic (SNE/MA) winter flounder, redfish, pollock, northern and southern windowpane, and ocean pout.

1.3 INTENT AND GOALS OF THE GEORGES BANK COD FIXED GEAR SECTOR

The Fixed Gear Sector is a group of self-selected fishermen that have come together voluntarily and cooperatively for the purposes of efficiently harvesting annual allocations of regulated groundfish as authorized by Amendment 16. The Fixed Gear Sector currently operates under a hard TAC of GB cod to meet the overfishing mandates of the SFA amendment to the Magnuson-Stevens Act. Furthermore, one of the Fixed Gear Sector's goals is to foster novel and highly adaptive means of local decision-making, self-monitoring, and Sector management that can serve as a model for the future of sustainable fisheries in New England. Specific goals of the Fixed Gear Sector are identified in Section 2.2.

Implementation of the Fixed Gear Sector Operations Plan would convey environmental, social, and economic benefits directly to the Fixed Gear Sector and the community in which it operates. By voluntarily restricting themselves to using fixed gear only (sink gillnets, benthic tub trawls, handlines, and rod-and-reels) and operating under a system of ACEs, Fixed Gear Sector members employ fishing practices that maintain a low rate of discarded stocks. For example, FY 2007 data yielded GB cod discard rates well under 5 percent. Additionally, economic benefits are accruing to the Fixed Gear Sector and to the Chatham/Harwichport community because Fixed Gear Sector members have been given the flexibility to make market-based decisions on when and where to fish.

1.4 DESCRIPTION OF THE GEORGES BANK FIXED GEAR SECTOR OPERATIONS PLAN FOR FISHING YEAR 2010

This EA is an evaluation of the impacts of approving the Fixed Gear Sector Operations Plan for FY 2010 and allocating ACEs of all regulated groundfish stocks authorized by Amendment 16, in comparison to the No-Action Alternative. The original Operations Plan for the Fixed Gear Sector was submitted in 2006 and was approved and implemented subsequent to the implementation of the Fixed Gear Sector by FW 42 to the Northeast Multispecies FMP in November 2006. Subsequent Operations Plans have been approved for FY 2007, 2008, and 2009. The Fixed Gear Sector Operations Plan for FY 2010 provides the specific details for how the Fixed Gear Sector would function and is required for Fixed Gear Sector operations approval for FY 2010.

There are many substantial changes in the FY 2010 Operations Plan and EA compared to the approved FY 2009 Fixed Gear Sector Operations Plan and corresponding EA, based on the development and implementation of Amendment 16. Furthermore, it should be noted that the FY 2009 Georges Bank Cod Hook Sector membership has joined the Fixed Gear Sector, in addition to other local groundfish permits not involved in any sector in FY 2009. A detailed summary of the Operations Plan can be found in Section 3.1.

2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This section describes the need for approval of the Fixed Gear Sector FY 2010 Operations Plan and the purpose of the Fixed Gear Sector. It also outlines how the Fixed Gear Sector's goals support Amendment 13 and 16 goals and objectives.

The need for this action is to provide an opportunity for flexible fisheries management through local decision-making, self-monitoring, and enforcement. The purpose of the action is to approve an Operations Plan and an allocation of all regulated groundfish stocks authorized by Amendment 16, for the Sector for which the process was specified and authorized as part of Amendment 13, subsequent framework adjustments, and Amendment 16 to allow Sector members to alleviate social and economic hardships while still meeting biological objectives through management rules by which the Sector participants agree to abide.

2.1 GOALS OF THE GEORGES BANK COD FIXED GEAR SECTOR

The Fixed Gear Sector has established a set of goals that are designed to meet many of the goals and objectives set forth by the NEFMC in Amendment 13 and reinforced in Amendment 16. The Fixed Gear Sector's goals and the relevant Amendment 13/16 goals and objectives are listed below (excerpted from the Amendment 13 Supplemental Environmental Impact Statement [SEIS]).

Georges Bank Cod Fixed Gear Sector Goals:

- **Goal 1:** Sustain a viable fixed gear fishery on Georges Bank.
- **Goal 2:** Sustain a viable commercial groundfish fleet in Chatham/Harwichport, Massachusetts.
- **Goal 3:** Assure that the fixed gear fleet will contribute to fisheries sustainability through utilization of a hard TAC.

- **Goal 4:** Create new opportunities for the Georges Bank fixed gear fleet, such as opportunities to pursue healthy or rebuilding groundfish stocks instead of GB cod.
- **Goal 5:** Retain access for small boat fishermen on Georges Bank.
- **Goal 6:** Promote stewardship of the GB cod resource.
- **Goal 7:** Implement community-based fisheries management in New England.
- **Goal 8:** Create a working model for future development, submission, and implementation of other sectors in the New England groundfish fishery.

Amendment 13 and 16 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 will be commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.
- **Goal 3:** Maintain a directed commercial and recreational fishery for Northeast multispecies.
- **Goal 4:** Minimize, to the extent practicable, adverse impacts on fishing communities and shore-side infrastructure.
- **Goal 6:** Promote stewardship within the fishery.

Amendment 13 and 16 Objectives:

- **Objective 1:** Achieve, on a continuing basis, optimum yield for the United States fishing industry.
- **Objective 3:** Adopt fishery management measures that constrain fishing mortality to levels that are compliant with the SFA.
- **Objective 4:** Implement rebuilding schedules for overfished stocks, and prevent overfishing.
- **Objective 7:** To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation.
- **Objective 9:** Adopt measures consistent with the habitat provisions of the Magnuson-Stevens Act, including identification of Essential Fish Habitat (EFH) and minimizing impacts on habitat to the extent practicable.
- **Objective 10:** Identify and minimize bycatch, which include regulatory discards, to the extent practicable, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

NEFMC Intent:

- It is the intent of the NEFMC to move groundfish management towards an output-based management system beginning with Amendment 16 and to be further developed in Amendment 17 (October 9, 2008).

The Fixed Gear Sector goals support Amendment 13 and Amendment 16 goals and objectives in a multitude of ways, and selected concurrences are outlined in this section. The Fixed Gear Sector's goals of sustaining a viable fixed gear fishery on Georges Bank (Goal 1) through utilization of hard TACs/ACEs (Goal 3) support the Amendment 13/16 goal of managing the Northeast multispecies complex at sustainable levels (Goal 1). Fixed Gear Sector Goals 1 and 3 also support Objective 1 of Amendment 13/16, which is to achieve (on a continuing basis) optimum yield for the United States fishing industry, and Objective 3 of Amendment 13/16, which is to adopt fishery management measures that constrain fishing mortality to levels that are compliant with the SFA. The Fixed Gear Sector goal of sustaining a viable commercial groundfish fleet in Chatham/Harwichport, Massachusetts (Goal 2) supports the Amendment 13/16 Goals 3 and 4, and Objective 7 of maintaining a directed fishery for Northeast multispecies, minimizing adverse impacts on fishing communities and shore-side infrastructure, and maintaining a diverse groundfish fishery. The Fixed Gear Sector goals of promoting stewardship of the GB cod resource (Goal 6) and implementing community-based fisheries management in New England (Goal 7) support Amendment 13/16 goals of creating a management system so that fleet capacity would be commensurate with resource status (Goal 2) and promoting stewardship within the fishery (Goal 6). Finally, each of the Fixed Gear Sector goals align with the intent of the NEFMC, as approved at the October 2008 meeting.

3.0 PROPOSED ACTION AND ALTERNATIVES

This section describes possible fishing alternatives, including details of the Proposed Action and a No-Action Alternative.

3.1 ALTERNATIVE 1 - IMPLEMENTATION OF THE GEORGES BANK COD FIXED GEAR SECTOR OPERATIONS PLAN FOR FISHING YEAR 2010

Alternative 1, the Proposed Action, is approval of the Fixed Gear Sector Operations Plan and receipt of an allocation of GB cod for FY 2010. Fixed Gear Sector vessels would be subject to the regulations implemented under the Operations Plan.

For the fifth year, the Fixed Gear Sector presents its Fixed Gear Sector Operations Plan for review and approval by the NMFS. The Proposed Action/Operations Plan has been deliberated by the prospective Fixed Gear Sector members and represents the culmination of many stakeholder meetings over many years.

A summary of the Fixed Gear Sector 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 Georges Bank Cod Fixed Gear Sector Operations Plan (Fishing Year 2010) | |
|--|--|
| Proposed Sector Parameters | Description |
| Location | All three regulated mesh areas: <ul style="list-style-type: none">• Gulf of Maine – Secondary fishing effort• Georges Bank – Primary fishing effort |

TABLE 3.1-1
Summary of the Georges Bank Cod Fixed Gear Sector Operations Plan (Fishing Year 2010)

| Proposed Sector Parameters | Description |
|---|---|
| Timeframe | <ul style="list-style-type: none"> Southern New England – Secondary fishing effort Fishing Year 2010 (<i>May 1, 2010–April 30, 2011</i>) |
| Gear | <ol style="list-style-type: none"> Hook and line gear (including jigs, handline, and demersal longlines); Sink gillnets |
| Allocated target stocks (14) | <ul style="list-style-type: none"> Cod (2) : GOM and GB – including Eastern U.S./Canada GB cod Haddock (2) : GOM and GB – including Eastern U.S./Canada GB Haddock Yellowtail Flounder (3) : GB, SNE/MA, and Cape Cod/GOM Plaice (1) Witch Flounder (1) Winter Flounder (3): GB, GOM, SNE/MA* Redfish (1) White Hake (1) Pollock (1) *Windowpane Flounder (2): North and South *Ocean Pout (1) *Halibut (1) *Atlantic Wolffish (1) |
| *allocations of these stocks will not be made, however trip limits may remain in place. | |
| Other Landed Species/ Bycatch | <ul style="list-style-type: none"> Primary (frequent): Skates, Monkfish, Spiny Dogfish; Secondary (infrequent): Bluefish, Lobster, Cusk, Mackerel, Cunner, Silver Hake, Tilefish, Shad, King Whiting, John Dory, Barndoor Skate, Summer Flounder, Sea Raven, Sculpin, Bluefin Tuna, Porbeagle Shark, Striped Bass, Sea Scallops; Protected Species (infrequent, and gillnet interactions only): Grey Seal, Harbor Porpoise, Greater Shearwater, Herring Gull, Northern Fulmar, Shearwater |

TABLE 3.1-1 (continued)
Summary of the Georges Bank Cod Fixed Gear Sector Operations Plan (Fishing Year 2010)

| Proposed Sector Parameters | Description | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------|--|---------------|----|-------------------|----|--------------------------------|--|------------|----|------------------|----|----------------|---|--|--|---------------------------------|----|--------------------------|----|-------------------|---|-----|----|
| Exemptions To Be Requested | <p>All applicable universal exemptions:</p> <ol style="list-style-type: none"> 1. Trip limits on allocated stocks; 2. May seasonal closure on GB; 3. Groundfish DAS restrictions (which includes differential counting, the 3/15 rule for gillnets, and 24-hr DAS counting); 4. Portions of GOM rolling closures; and 5. Additional mortality controls adopted by Amendment 16 (such as seasonal and year-round closed areas, gear requirements, DAS reductions, differential DAS counting, and/or restricted gear areas). <p>Additional exemptions:</p> <ol style="list-style-type: none"> 1. Hook Limits; 2. Gillnet hauling restrictions (maintain existing net limits, but allow additional nets to be hauled); 3. Gillnet mortality/effort blocks (50 C.F.R. 648.82(j)(1)(ii)): <ul style="list-style-type: none"> • 21 days between July 1 and September 30; • An additional 80 days throughout the fishing year; and • Does NOT including the Spawning Block (20 days between March 1 and May 31) | | | | | | | | | | | | | | | | | | | | | | | | |
| Number of Participants | <table border="1"> <thead> <tr> <th align="center" colspan="2">Sector Roster</th></tr> </thead> <tbody> <tr> <td align="right">Lease Vessels</td><td align="center">46</td></tr> <tr> <td align="right">Non-Lease Vessels</td><td align="center">49</td></tr> <tr> <th align="center" colspan="2">Targeted Commercial Fisheries*</th></tr> <tr> <td align="right">Groundfish</td><td align="center">45</td></tr> <tr> <td align="right">Monkfish & Skate</td><td align="center">14</td></tr> <tr> <td align="right">Lobster (Trap)</td><td align="center">3</td></tr> <tr> <th align="center" colspan="2">Primary Gear Type** (Groundfish, Monkfish, Skate)</th></tr> <tr> <td align="right">Sink Gillnet – Extra Large Mesh</td><td align="center">10</td></tr> <tr> <td align="right">Sink Gillnet –Large Mesh</td><td align="center">10</td></tr> <tr> <td align="right">Demersal Longline</td><td align="center">6</td></tr> <tr> <td align="right">Jig</td><td align="center">23</td></tr> </tbody> </table> | Sector Roster | | Lease Vessels | 46 | Non-Lease Vessels | 49 | Targeted Commercial Fisheries* | | Groundfish | 45 | Monkfish & Skate | 14 | Lobster (Trap) | 3 | Primary Gear Type** (Groundfish, Monkfish, Skate) | | Sink Gillnet – Extra Large Mesh | 10 | Sink Gillnet –Large Mesh | 10 | Demersal Longline | 6 | Jig | 23 |
| Sector Roster | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lease Vessels | 46 | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Lease Vessels | 49 | | | | | | | | | | | | | | | | | | | | | | | | |
| Targeted Commercial Fisheries* | | | | | | | | | | | | | | | | | | | | | | | | | |
| Groundfish | 45 | | | | | | | | | | | | | | | | | | | | | | | | |
| Monkfish & Skate | 14 | | | | | | | | | | | | | | | | | | | | | | | | |
| Lobster (Trap) | 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| Primary Gear Type** (Groundfish, Monkfish, Skate) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sink Gillnet – Extra Large Mesh | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| Sink Gillnet –Large Mesh | 10 | | | | | | | | | | | | | | | | | | | | | | | | |
| Demersal Longline | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| Jig | 23 | | | | | | | | | | | | | | | | | | | | | | | | |

Note: Numbers are based on the January 22, 2010 Sector roster.

**Includes Vessels participating in both the groundfish and monkfish/skate fisheries.*

***Includes vessels utilizing both sink gillnet and demersal longline gears.*

TABLE 3.1-1 (continued)
Summary of the Georges Bank Cod Fixed Gear Sector Operations Plan (Fishing Year 2010)

| Proposed Sector Parameters | | Description | |
|---|---|-------------|--------|
| Potential Sector Contributions (PSC) <i>Note: Percentages are approximate, and will be finalized upon the approval of a final Sector roster and the final FY 2010 ACEs.</i> *allocations of these stocks will not be made, however trip limits may remain in place. **allocations of these stocks will be made for the Eastern U.S./Canada Area in the percentages applied here. | Cod (GOM) | | 1.90% |
| | **Cod (GB) | | 28.08% |
| | Haddock (GOM) | | 1.29% |
| | **Haddock (GB) | | 6.41% |
| | Yellowtail Flounder (GB) | | 0.01% |
| | Yellowtail Flounder (SNE/Mid-Atlantic) | | 0.18% |
| | Yellowtail Flounder (Cape Cod/GOM) | | 1.83% |
| | Plaice | | 0.55% |
| | Witch Flounder | | 0.80% |
| | Winter Flounder (GB) | | 0.03% |
| | Winter Flounder (GOM) | | 2.24% |
| | *Winter Flounder (SNE) | | n/a |
| | Redfish | | 2.89% |
| | White Hake | | 5.92% |
| | Pollock | | 7.81% |
| | Windowpane Flounder (North) | | n/a |
| | Windowpane Flounder (South) | | n/a |
| | Ocean Pout | | n/a |
| | Halibut | | n/a |
| | Atlantic Wolffish | | n/a |
| Expected Catch (including allocated and other landed species) | Assumed to be equal to the ACE | | |

TABLE 3.1-1 (continued)
Summary of the Georges Bank Cod Fixed Gear Sector Operations Plan (Fishing Year 2010)

| Proposed Sector Parameters | | Description | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|----------------|------------------|------------|--|--|-------------|--|--|-------------|---------------|------------------|----------------|--|-----|-----------------|-----------------|----------------|---|-----|-----------------|--|---|--------------|--------------|
| Anticipated Trips and Effort <i>Note: Numbers are substantially approximate, and will be finalized upon the approval of a final Sector roster.</i> | | Anticipated Number of Trips (+/- 25% or more) | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Large-Mesh Gillnet (<10") | 450 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Extra Large-Mesh Gillnet (>10") | 600 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Demersal Longline | 300 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Jig/Handline/Rod-and-Reel | 50 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TOTAL | 1,400 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table><tr><th></th><th>Primary Effort</th><th>Secondary Effort</th></tr><tr><td>May</td><td>Gillnet fishing in SNE (monkfish and skates)</td><td>Hook fishing in U.S./Canada area and GOM (haddock and cod)</td></tr><tr><td>June</td><td rowspan="4">Gillnet fishing inshore GB (cod and pollock)</td><td rowspan="4">Hook fishing in U.S./Canada area (haddock and cod)</td></tr><tr><td>July</td></tr><tr><td>August</td></tr><tr><td>September</td></tr><tr><td>October</td><td rowspan="3">Hook fishing in Closed Area I (haddock and cod) ; Gillnet fishing inshore GB (cod and pollock)</td><td rowspan="3">n/a</td></tr><tr><td>November</td></tr><tr><td>December</td></tr><tr><td>January</td><td>Hook fishing inshore GB and GOM (cod and haddock)</td><td>n/a</td></tr><tr><td>February</td><td rowspan="3">Gillnet fishing in SNE (monkfish and skates)</td><td rowspan="4">Hook fishing inshore GB and GOM (cod and haddock)</td></tr><tr><td>March</td></tr><tr><td>April</td></tr></table> | | | | Primary Effort | Secondary Effort | May | Gillnet fishing in SNE (monkfish and skates) | Hook fishing in U.S./Canada area and GOM (haddock and cod) | June | Gillnet fishing inshore GB (cod and pollock) | Hook fishing in U.S./Canada area (haddock and cod) | July | August | September | October | Hook fishing in Closed Area I (haddock and cod) ; Gillnet fishing inshore GB (cod and pollock) | n/a | November | December | January | Hook fishing inshore GB and GOM (cod and haddock) | n/a | February | Gillnet fishing in SNE (monkfish and skates) | Hook fishing inshore GB and GOM (cod and haddock) | March | April |
| | Primary Effort | Secondary Effort | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | Gillnet fishing in SNE (monkfish and skates) | Hook fishing in U.S./Canada area and GOM (haddock and cod) | | | | | | | | | | | | | | | | | | | | | | | | | |
| June | Gillnet fishing inshore GB (cod and pollock) | Hook fishing in U.S./Canada area (haddock and cod) | | | | | | | | | | | | | | | | | | | | | | | | | |
| July | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| August | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| September | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| October | Hook fishing in Closed Area I (haddock and cod) ; Gillnet fishing inshore GB (cod and pollock) | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| November | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| December | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| January | Hook fishing inshore GB and GOM (cod and haddock) | n/a | | | | | | | | | | | | | | | | | | | | | | | | | |
| February | Gillnet fishing in SNE (monkfish and skates) | Hook fishing inshore GB and GOM (cod and haddock) | | | | | | | | | | | | | | | | | | | | | | | | | |
| March | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| April | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Primary Hailing and Unloading Ports | <ul style="list-style-type: none">• Aunt Lydia’s Cove, Chatham, Massachusetts• Stage Harbor, Chatham, Massachusetts• Saquatucket Harbor, Harwich, Massachusetts• Allen’s Harbor, Harwich, Massachusetts• Wychmere Harbor, Harwich, Massachusetts | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 FMP (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).

3.1.1 Number of Participants and Gear Used

There are approximately 95 permits in the Fixed Gear Sector, representing approximately 49 vessels that could operate; of those 49, approximately 30 are likely to target groundfish, skates, or monkfish in any substantial quantity. Gear used within the Fixed Gear Sector is typical of the traditional fixed gear fleet, specifically hook and line gear (benthic tub trawl, handlines, and rod-and-reel), and sink gillnets. Vessels range, in size, from 32 to 50 feet and 150 to 650 horsepower. Vessels sail from Chatham or Harwichport and commonly return to port after 12 to 25 hours at sea.

Vessels utilize sink gillnet gear or hook and line gear; however, a portion of gillnet vessels switch to demersal longline gear throughout the year to participate in the Special Access Program (SAPs), other special management programs, or to maximize their access to haddock. Approximately 20 vessels would solely target groundfish, 4 would solely target monkfish and skates, and 15 would target all of the above.

It is anticipated that a majority (approximately 1,050) of all Sector trips (approximately 1,400) would be taken by vessels fishing gillnets. Of those trips, more trips are likely to be taken by vessels targeting monkfish and skates with extra large-mesh (600 trips) than vessels targeting groundfish (450 trips). Approximately 300 trips could be taken by demersal longline vessels and approximately 50 trips potentially by jig vessels. It is important to note that these estimates are to be considered preliminary, and the final numbers would depend on but are not limited to a final Sector roster, further interpretations of NMFS rulings, availability of ACE, efficiency of ACE transfers, market prices, weather, and availability of fish.

In May, it is anticipated that a majority of effort may come from vessels using extra large gillnets to target monkfish and skates in southern New England; secondary effort may occur by vessels using hook gear in the U.S./Canada area and in the Gulf of Maine targeting haddock and cod. From June through September, primary effort is anticipated to occur by gillnet fishermen inshore Georges Bank targeting cod and pollock, while secondary effort is likely to occur by hook fishermen in the U.S./Canada area targeting haddock and cod. Between October and December, the only effort that is anticipated is likely to come from hook fishing in Closed Area I for haddock and cod, and gillnet fishing inshore Georges Bank for cod and pollock. In January, effort is likely to only occur by hook fishermen inshore Georges Bank and Gulf of Maine for cod and haddock. From February to April, primary effort is anticipated to occur in southern New England/Mid-Atlantic areas by extra-large-mesh gillnet fishermen targeting monkfish and skates; secondary effort is likely to occur inshore Georges Bank and the Gulf of Maine by hook fishermen targeting cod and haddock. It is important to note that these estimates are to be considered preliminary, and the final numbers would depend on but are not limited to a final Sector roster, further interpretations of NMFS rulings, availability of ACE, efficiency of ACE transfers, market prices, weather, and availability of fish.

Vessels participating in the Fixed Gear Sector would be legally bound to uphold and abide by the Operations Plan and by the harvest rules presented below (Section 3.1.4).

In FY 2009, approximately 44 percent of the permits enrolled in the Fixed Gear Sector for FY 2010 are attached to vessels actively fishing for Northeast multispecies. For FY 2010, the Fixed Gear Sector has 95 permits currently enrolled. Of those permits, approximately 49 permits, or approximately 52 percent are anticipated to actively fish for Northeast multispecies in FY 2010. While these numbers may change, the Fixed Gear Sector 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. 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 little-to-no additional consolidation.

The Fixed Gear Sector anticipates that some vessels may switch fishing efforts into the following fisheries:

- Monkfish (extra-large-mesh sink gillnets)
- Skates (extra-large-mesh sink gillnets)

3.1.2 Location and Timeframe of the Georges Bank Cod Fixed Gear Sector

Fixed Gear Sector members would fish within the entire range of the Northeast multispecies complex – the Gulf of Maine Regulated Mesh Area (RMA), the Georges Bank RMA, and the southern New England RMA. Most fishing effort would occur in the Georges Bank RMA, with secondary effort occurring in the Gulf of Maine RMA; little effort would occur in the southern New England RMA.

The timeframe for operation is FY 2010, from May 1, 2010 to April 30, 2011.

3.1.3 Allocated Target Species and Other Landed Species

The Fixed Gear Sector requests allocations from all regulated groundfish authorized by Amendment 16, including cod (GOM and GB), haddock (GOM and GB), yellowtail flounder (GB, SNE/MA, and Cape Cod/GOM), plaice, witch flounder, winter flounder (GB, GOM, SNE/MA if available in the future), redfish, white hake, and pollock.

3.1.4 Fixed Gear Sector Exemptions

3.1.4.1 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, the 3/15 rule for gillnets, 24-hour DAS counting, and any differential groundfish DAS counting areas implemented as an Accountability Measure.
- Exemption from trip limits on allocated stocks except for the following:
 1. Halibut: trip limit would continue to be one fish per trip;
 2. 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 seasonal or year-round closures, or other mortality controls, added in Amendment 16.²
- Exemption from any additional gear requirements or gear restricted areas added in Amendment 16.
- Gulf of Maine Rolling Closures in specific blocks as identified in Amendment 16 (specifically Section 4.2.3.9).³
- 6.5 inch mesh in the cod-end in haddock separator trawl/ Ruhle trawl when targeting haddock (i.e., authorized to use 6 inch mesh in the cod-end).

If Amendment 16 adopts additional mortality controls, such as additional seasonal and year-round closed areas, gear requirements, differential DAS counting, and/or restricted gear areas, sectors would not be required to adhere to these additional measures since mortality by Fixed Gear Sector vessels would be controlled by an ACE (NEFMC 2009a).

In addition, Amendment 16 adopts certain provisions for sector vessels that participate in Special Management Programs. While not defined as a universal exemption, the Fixed Gear Sector intends to participate in these programs where applicable (e.g., Eastern U.S./Canada Haddock and Yellowtail 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.

3.1.4.2 Additional Requested Exemptions

Hook Limits

1) Exemption from the limit on the number of hooks that may be fished

The Fixed Gear Sector seeks an exemption from hook limits in the Gulf of Maine RMA (2,000), Georges Bank RMA (3,600), and southern New England RMA (2,000). It should be noted that the GB Cod Hook Sector achieved this exemption since its inception in 2004; the Fixed Gear Sector currently operates with this exemption as it has since inception in 2006. Achieving this exemption would allow Sector vessels to maximize their efficiency when hook fishing (especially important given that a substantial amount of hook fishing occurs over 100 miles from shore), promote hook fishing to target haddock, protect the traditional hook fleet of Chatham and Harwichport, and reduce bycatch of unwanted species (especially flounders, of which the Sector has little ACE). While the potential exists for increased hook gear to result in increased interactions with protected resources, there is a low probability of this occurring. According to the 2009 List of Fishery, the Northeast/Mid-Atlantic bottom longline/hook and line fishery has had no reports of marine mammal species and stocks incidentally killed/injured, maintaining its status as a Category III fishery with a “remote likelihood of, or no known incidental

² NMFS is granting year-round access to the Eastern U.S./Canada Area for yellowtail flounder as stipulated, but not specified, in Amendment 16.

³ 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.

mortality and serious injury of marine mammals.” “Equity” issues would be addressed internally by the Sector Board, which is anticipated to be comprised of both gillnet and hook and line Members.

Gillnet hauling restriction

2) *Exemption from regulations prohibiting the hauling of more than 50 nets per trip.*

The Fixed Gear Sector would maintain existing gillnet limits, but seeks an exemption from the multispecies regulation that prohibits hauling more than 50 nets per trip. Multispecies regulations at 50 C.F.R. 648.80 specify the number of gillnets (roundfish, flatfish, or combined) that may be “fished” (“*fish with, haul, possess, or deploy*”) by a day gillnet vessel in each RMA. While day gillnet vessels are limited to 150 gillnets on the vessel or in the water (across the Georges Bank and Gulf of Maine RMAs), they can only haul 50 nets while on Georges Bank. The Monkfish FMP allows fishing with 150 gillnets with no limit on the number per area. The Sector seeks an exemption from the restriction that vessels on Georges Bank only haul 50 gillnets while operating on a groundfish DAS for trips where the vessel is also on a monkfish DAS. The effect of the exemption would be that Sector vessels fishing both a groundfish DAS and a monkfish DAS would not be limited to hauling only 50 nets on Georges Bank. It should be clear that the Sector is not seeking an exemption from any monkfish regulations, nor is the Sector seeking an exemption from the groundfish net limits – the Sector is only seeking an exemption from net hauling limits to allow Members to haul all of the gillnet gear that they are allowed to have in the water. Achieving this exemption would allow Sector vessels to increase their efficiency by hauling through more gear more quickly, as opposed to hauling gear in the amount of more than 50 nets but only in 50-net increments. The Fixed Gear Sector anticipates that this exemption would promote responsible “tending” of gillnets by allowing Members to haul their existing gear in shorter periods of time, thereby reducing the potential for unsustainable fishing practices. As such, the Fixed Gear Sector anticipates that “soak times” may decrease accordingly. These measures would be closely monitored and enforced internally by the Board.

Gillnet mortality/effort blocks (50 C.F.R. 648.82(j) (1) (ii))

3) *Exemption from the non-spawning portions of the 120-day block out of the fishery for gillnet vessels*

The Fixed Gear Sector requests to be exempted from the non-spawning portions of the 120-day block out requirement for gillnetters.

Justification

Under the existing effort control system that incorporates the 120-day block out of the fishery (50 CFR § 648.82 (1)(ii)), a substantial portion of active Sector members have deployed an additional fishing vessel and associated permit to mitigate the lost fishing income attributed to the 120-day block regulation – approximately eight to ten active fishing platforms were acquired for this reason. Due to this increase in vessels and gear, Sector members presently fishing under these Common Pool regulations collectively represent a fixed gear fishing capacity that is greater than the capacity that would operate under Sector management. The Proposed Action (approval of the Operations Plan) would allow these members to decommission their additional vessels, place the associated permits into confirmation of permit history (CPH), and enroll the permits into the Fixed Gear Sector to supplement the PSC of the primary fishing operation. This additional effort is currently employed in the fishery primarily as a result of the 120-day block out regulation. These vessels and the associated extra gear would continue to be employed if the No-Action Alternative (Common Pool) was selected. It must also be noted that the primary Accountability Measure (AM) for the Fixed Gear Sector would be to cease fishing once any ACE is

projected to be harvested for any stock allocated to the Sector. The 120-day block could impede the Fixed Gear Sector's ability to harvest their ACE efficiently relative to other gear types/sectors.

Authorization of this exemption may change fishing behavior in that additional effort may be expended during times that vessel would otherwise be signed into a block and therefore not active. Members may use this exemption to maximize their efficiency during fair weather or profitability when market prices are favorable. Additional effort may be expended during the summer months (increased catch and fair weather) in the areas in which Members currently operate or are predicted to operate but are bound by the 21 days of block; less effort may therefore be expended during the winter months (decreased catch and foul weather). However, unpredictable market prices would ultimately determine the level of effort shift and the impact of increased effort during favorable months (21 days of block time); unpredictable weather patterns would ultimately determine the level of effort shift and impact of decreased effort during "unfavorable" months (additional 80 days of block time). This exemption may allow multiple-vessel owners to consolidate their businesses onto one active fishing vessel, as opposed to owning and operating two active fishing vessels whereby Members would utilize one vessel when the other vessel is signed into a block. This would thereby reduce operating costs and safety concerns that occur when maintaining multiple active fishing vessels. "Equity" issues would be addressed internally by the Sector Board, which is anticipated to be comprised of both gillnet and hook and line Members.

3.1.5 Fishing Year 2010 (May 1, 2010-April 30, 2011) Georges Bank Cod Fixed Gear Sector Operations Plan Harvesting Rules:

The Members and the Participating Vessels of the Sector agree to be legally bound to follow the Harvesting Rules for the FY 2010 as described herein, notwithstanding those rules and regulations applicable to Common Pool multispecies vessels.

QUOTA MANAGEMENT

Harvesting Rules under this heading represent any action taken to preserve the Sector's ACE based on collected monitoring data.

Annual Catch Entitlements

The Members agree that they would not collectively harvest more ACE than allocated to the Sector, and that once the ACE is reached for any stock, no Member would fish commercially with any fishing gear capable of harvesting regulated groundfish species in the area for which there is no ACE. Table 3.1.5-1 provides initial and approximate ACE allocations for the Sector:

Target Quotas

The Manager may impose weekly or trip target quotas to slow down harvest rates. If such target quotas are imposed, Sector Members agree to adjust their fishing operations to avoid exceeding these quotas.

Full Retention of Species for Which the Sector Has an ACE

All legal size fish harvested during any commercial fishing operation and for which the Sector has an ACE must be retained and counted against the Sector's ACE, except for regulated groundfish allocated by Amendment 16 harvested in fisheries that account for this catch with a fishery-wide ACL.

Trip Limits for Stocks Without Annual Catch Entitlements:

Sector Members would be subject to all possession and trip limits for those stocks for which the Sector is not allocated ACE.

TABLE 3.1.5-1
Initial Approximate PSC Allocations for the Georges Bank Cod Fixed Gear Sector

| STOCK | APPROX. PSC (%) | APPROX. ACE (pounds live weight) |
|--|------------------------|---|
| Cod (GOM) | 1.90% | 87 |
| Cod (GB) - Eastern U.S./Canada | 28.08% | 95 |
| Cod (GB) – Western U.S./Canada | | 868 |
| Haddock (GOM) | 1.29% | 11 |
| Haddock (GB) – Eastern U.S./Canada | 6.41% | 768 |
| Haddock (GB) – Western U.S./Canada | | 1823 |
| Yellowtail Flounder (GB) | 0.01% | <1 |
| Yellowtail Flounder (SNE/Mid-Atlantic) | 0.18% | 1 |
| Yellowtail Flounder (Cape Cod/GOM) | 1.83% | 14 |
| Plaice | 0.55% | 16 |
| Witch Flounder | 0.80% | 7 |
| Winter Flounder (GB) | 0.03% | <1 |
| Winter Flounder (GOM) | 2.24% | 4 |
| Redfish | 2.89% | 198 |
| White Hake | 5.92% | 151 |
| Pollock | 7.81% | 215 |
| Winter Flounder (SNE) | n/a | n/a |
| *Windowpane Flounder (North) | n/a | n/a |
| *Windowpane Flounder (South) | n/a | n/a |
| *Ocean Pout | n/a | n/a |
| *Halibut | n/a | n/a |
| *Atlantic Wolffish | n/a | n/a |
| <p><i>Note: Percentages are approximate, and will be finalized upon the approval of a final Sector roster and the final FY2010 ACEs.</i></p> <p><i>*n/a means allocations of these stocks will not be made, however trip limits may remain in place.</i></p> | | |

MONITORING

Harvesting Rules under this heading represent any action that involves collection of data including At-Sea Monitoring, Dockside Monitoring, and discards.

ADMINISTRATIVE

Harvesting Rules under this heading represent any actions that are truly administrative, including methods of transmitting data, and proof of Sector membership.

Days-At-Sea

Each participating Permit and Participating Vessel would be allocated DAS by the Regional Administrator, as set forth on Exhibit C to the Agreement. This DAS allocation would be considered the Sector's DAS allocation to individual Members. Members may be required to use an "A," "B Regular," or "B Reserve," DAS when conducting fishing operations.

DAS Pooling

Participating Vessels and/or Permits may redistribute or pool DAS to other Participating Vessels and/or Permits, provided that the Manager has given his prior written consent to such redistribution or pooling. The Manager shall notify NMFS within 3 calendar days of any such redistribution or pooling. A Participating Vessel and/or Permit may not transfer or lease DAS to or from any non-Sector vessel and/or permit during the fishing year in which the Participating Vessel and/or Permit is enrolled in the Sector, unless such leasing or transferring is authorized by an amendment to the Plan or by the Regional Administrator.

GEAR RESTRICTIONS

Harvesting Rules under this heading represent restrictions on the types of gears that may be used.

Unless otherwise permitted under the Sector Operations Plan, no Participating Vessel may fish for regulated groundfish species with any gear other than jigs, demersal longline, handgear, or sink gillnets. All Participating Vessels are subject to the same gear restrictions on marking, tagging, and mesh size applicable to Common Pool vessels using the same type of gear. In addition, when fishing with hooks all hooks must be 12/0 circle hooks. A "circle hook" is defined as a hook with the point turned back towards the shank and the barbed end of the hook is displaced (offset) relative to the parallel plane of the eyed-end, or shank of the hook when laid on its side. When fishing with tie-down/low-profile sink gillnets, Participating Vessels are prohibited from using mesh size less than ten inches.

In addition to the Operations Plan, Fixed Gear Sector members would be subject to a legally binding membership agreement that would delineate the interaction of members within the Fixed Gear Sector, including governance, monitoring, and assessment of penalties for non-compliance. Furthermore, Fixed Gear Sector members would be subject to a binding Sector Catch Monitoring Agreement that would adhere to the Amendment 16 mandates and any requests by the Fixed Gear Sector Manager.

Table 3.1.5-2 identifies and compares those elements of the Operations Plan that are specific to the Fixed Gear Sector (Proposed Action) to those elements of current regulations that would pertain to fixed gear vessels in the Common Pool.

| TABLE 3.1.5-2 Comparison of Management Measures for Georges Bank Cod Fixed Gear Sector Vessels Under the Operations Plan and Common Pool Rules | | |
|---|--|------------------------------------|
| Management Measures | Operations Plan (Proposed Action) | Common Pool (No Action) |
| Hard TAC/ACE allocation of all regulated groundfish as authorized by Amendment 16 | Yes | No |
| Transfer and carryover of ACE | Yes | No |
| Restricted gear operations when an ACE has been achieved | Yes | No |
| Weekly quota targets | Yes | No |
| Days-at-Sea allocations | Yes | Yes |
| Sector notification | Yes | No |
| Days At Sea and Associated Regulations | No | Yes |
| Hail Requirements | Yes | Yes |
| Full retention of all legal-sized regulated groundfish as authorized by Amendment 16 | Yes | No |
| Species trip limits | No | Yes |
| Gear restrictions (gear type) | Fixed gear only | Fixed gear and mobile gear |
| Gear restrictions (hook limit) | No | Yes |
| Gear restrictions (circle hook) | Yes | No |
| Gear restrictions (net limit) | Yes | Yes |
| Georges Bank Seasonal Closure (May 1-May 31) | Yes | No |
| Access to Rolling Closures | Yes | No |
| Access to all RMAs | Yes | Yes |
| Gillnet mortality blocks | No | Yes |

3.2 ALTERNATIVE 2 - NO-ACTION ALTERNATIVE

Alternative 2, the No-Action Alternative, is the disapproval of the Fixed Gear Sector Operations Plan and no submission of a modified Operations Plan. Therefore, under the No-Action Alternative, all vessels would remain in the Common Pool and fish under the regulations implemented in Amendment 13, subsequent framework adjustments, and Amendment 16 to the Northeast Multispecies FMP. Therefore, no allocation of ACE would be made to the Fixed Gear Sector. The No-Action Alternative would subject all Fixed Gear Sector vessels to the input control measures, implemented by Amendment 13 and subsequent FW adjustments, to rebuild overfished stocks and end overfishing on those stocks where it is occurring. Common Pool measures are described in the Final Amendment 16 to the Northeast Multispecies FMP (NEFMC 2009a).

3.3 ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER ANALYSIS

No other alternatives were considered.

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, southern New England/Mid-Atlantic Bight, and the continental slope. Since the Fixed Gear Sector would fish in the waters of the Gulf of Maine, Georges Bank, and 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).

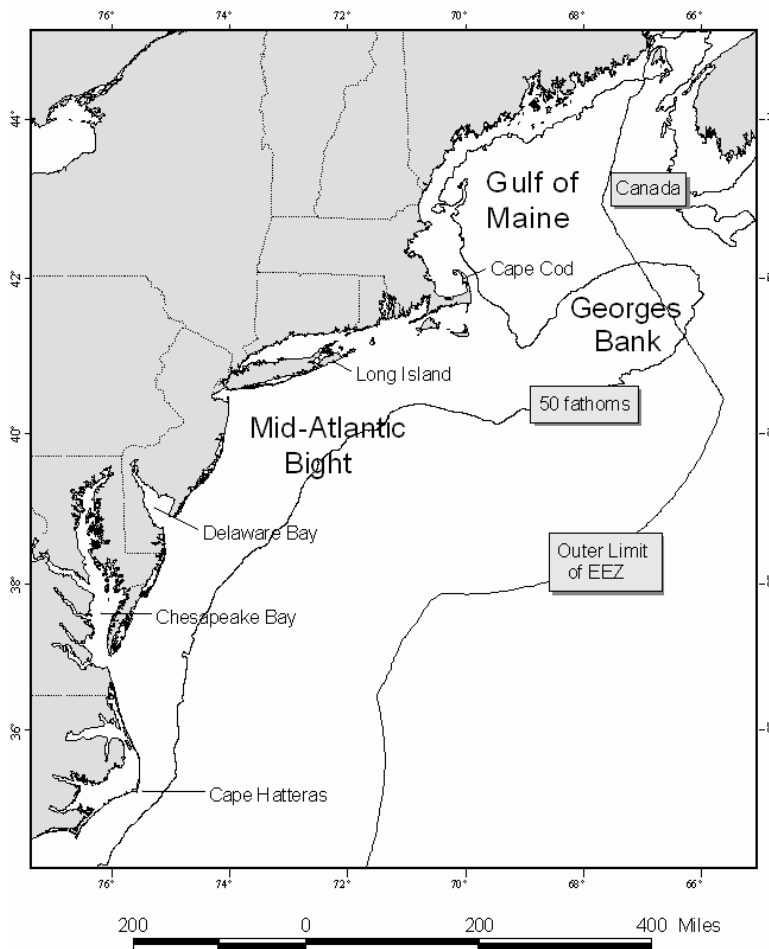


Figure 4.1-1 Northeast U.S Shelf Ecosystem

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.

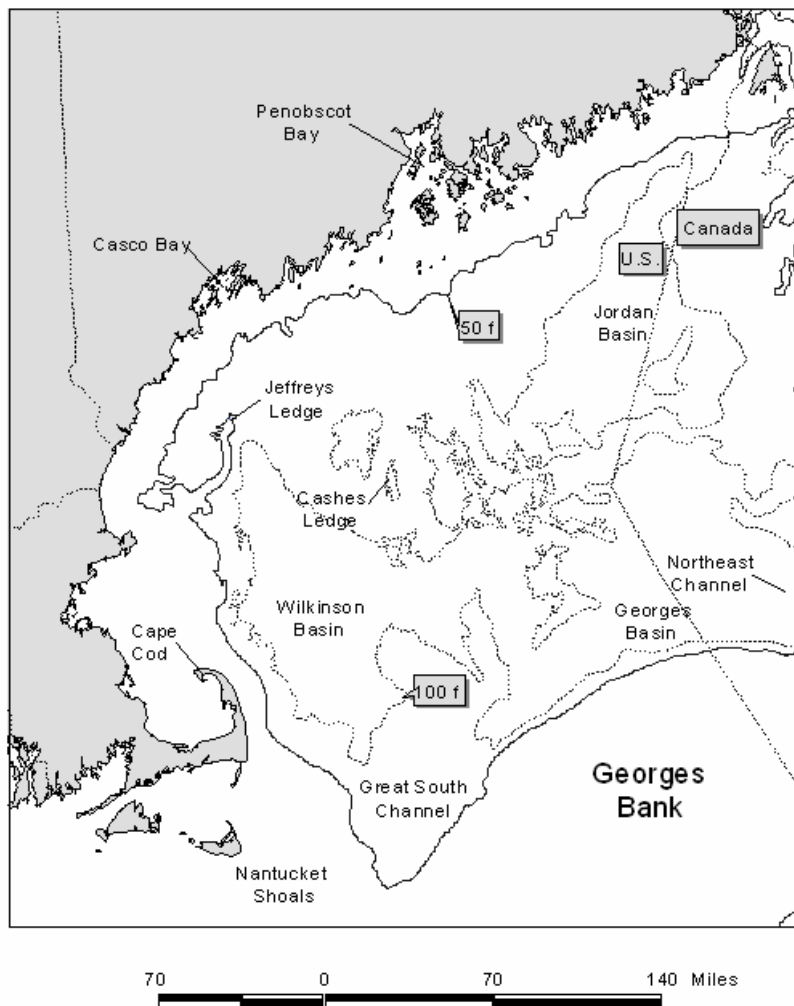


Figure 4.1.1-1 Gulf of Maine

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,⁴ sometimes with boulders, predominates others. Bedrock is the predominant substrate along the western edge of the Gulf of Maine, north of Cape Cod in a narrow band out to a depth of about 60 m. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Gravel, often mixed with shell, is common adjacent to bedrock outcrops and in fractures in the rock. Gravel is most abundant at depths of 20 to 40 m, except off eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Sandy areas are relatively rare along the inner shelf of the western Gulf of Maine, but are more common south of Casco Bay, especially offshore of sandy beaches.

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

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

- Sandy offshore banks: fauna are characteristically sand dwellers with an abundant interstitial component;
- Rocky offshore ledges: fauna are predominantly sponges, tunicates, bryozoans, hydroids, and other hard bottom dwellers;
- Shallow (< 60 m) temperate bottoms with mixed substrate: fauna population is rich and diverse, primarily comprised of polychaetes and crustaceans;
- Primarily fine muds at depths of 60 to 140 m within cold Gulf of Maine Intermediate Water:⁵ 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

⁴ 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.

⁵ 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.

- 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 common⁶ demersal fish species by assemblages in the Gulf of Maine and Georges Bank:

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

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.

⁶ Other species were listed as found in these assemblages, but only the species common to both studies are listed.

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

Rather than substrate as in the Gulf of Maine and Georges Bank, latitude and water depth are considered to be the primary factors influencing demersal fish species distribution in the Mid-Atlantic Bight area. The following assemblages were identified by Colvocoresses and Musick (1984) in the Mid-Atlantic subregion during spring and fall.⁷

- Northern (boreal) portions: hake (white, silver, red), goosefish (monkfish), longhorn sculpin, winter flounder, little skate, and spiny dogfish;

⁷ Other species were listed as found in these assemblages, but only the species common to both spring and fall seasons are listed.

- 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 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 habitats of these species during this life stage are therefore not generally subject to impact by this fishing gear and are not listed in Table 4.1.2-1.

4.1.3 Essential Fish Habitat (EFH)

EFH is defined by the SFA of 1996 as “[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The environment that could potentially be affected by the Proposed Action has been identified as EFH for benthic life stages of species that are managed under the Northeast Multispecies FMP; Atlantic sea scallop; monkfish; deep-sea red crab; northeast skate complex; Atlantic herring; summer flounder, scup, and black sea bass; tilefish; squid, Atlantic mackerel, and butterfish; Atlantic surfclam and ocean quahog FMPs. EFH for the species managed under these FMPs includes a wide variety of benthic habitats in state and Federal waters throughout the Northeast U.S. Shelf Ecosystem. EFH descriptions of the general substrate or bottom types for all the benthic life stages of the species managed under these FMPs are summarized in Table 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.

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) (A): 10-150 m (33-492 ft) | (J): Cobble or gravel bottom substrates (A): Rocks, pebbles, or gravel bottom substrate | Otter trawl, longlines, gillnets |
| Haddock | southwestern Gulf of Maine and shallow waters of Georges Bank | Benthic feeders (amphipods, polychaetes, echinoderms), bivalves, and some fish | (J): 35-100 m (115– 28 ft) (A): 40-150 m (131-492 ft) | (J): Pebble and gravel bottom substrates (A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches | Otter trawl, longlines, gillnets |
| Acadian redfish | Gulf of Maine, deep portions of Georges Bank and Great South Channel | Crustaceans | (J): 25-400 m (82-1,312 ft) (A): 50-350 m (164–1,148 ft) | (J): Bottom habitats with a substrate of silt, mud, or hard bottom (A): Same as for (J) | Otter trawl |
| Pollock | Gulf of Maine, extends to Georges Bank, and the northern part of Mid-Atlantic Bight | Juvenile feed on crustaceans, adults also feed on fish and mollusks | (J): 0-250 m (0-820 ft) (A): 15-365 m (49-1,198 ft) | (J): Bottom habitats with aquatic vegetation or substrate of sand, mud, or rocks (A): Hard bottom habitats including artificial reefs | Otter trawl, gillnets |

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) (A): 20-50 m (66-164 ft) | (J): Bottom habitats with substrate of sand or sand and mud (A): Same as for (J) | Otter trawl |
| American plaice | Gulf of Maine, Georges Bank | Polychaetes, crustaceans, mollusks, echinoderms | (J): 45-150 m (148-492 ft) (A): 45-175 m (148-574 ft) | (J): Bottom habitats with fine grained sediments or a substrate of sand or gravel (A): Same as for (J) | Otter trawl |
| Witch flounder | Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England | Mostly polychaetes (worms), echinoderms | (J): 50-450 m (164-1,476 ft) (A): 25-300 m (82-984 ft) | (J): Bottom habitats with fine grained substrate (A): Same as for (J) | Otter trawl |
| Winter flounder | Gulf of Maine, Georges Bank, Mid-Atlantic Bight/southern New England | Polychaetes, crustaceans | (E): <5 m (16 ft) (J): 0.1-10 m (0.3-32 ft) (1-50 m age 1+) (3.2-164 ft) (A): 1-100 m (3.2-328 ft) | (E): Bottom habitats with a substrate of sand, muddy sand, mud, and gravel (J): Bottom habitats with a substrate of mud or fine grained sand (A): Bottom habitats including estuaries with substrates of mud, sand, gravel | Otter trawl, gillnets |

| 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.

4.1.4 Gear Types and Interaction with Habitat

The Fixed Gear Sector would use gillnet, longline and jig gear to fish for groundfish 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 Fixed Gear Sector 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 | Sink/ Anchor Gillnets | Bottom Longlines | Hook and Line |
| Total Length | 295 ft long per net. | ~1,476 ft. | Varies by target species |
| Lines | 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 | 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 | 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 | 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 |

Gillnet Gear

Approximately 41 percent of the fishing effort by the Fixed Gear Sector would use individual sink/anchor gillnets. These nets 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).

A bottom gillnet is a large wall of netting equipped with floats at the top and lead weights along the bottom. The mesh of an individual gillnet 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 about 6-foot intervals, so that they floatline is close to the bottom, and the net forms a limp bag between eat tie. They are left in the water for 3-4 days, and are used to catch flounders and monkfish.

Longline Gear

The fishing effort of the Fixed Gear Sector would also use longlines (approximately 12 percent). Longlines 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).

Hook and Line Gear

Hand Lines/Rod and Reel

The fishing effort of the Fixed Gear Sector would also use hook and line gear. 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 deep. Hooks and sinkers can contact the bottom, depending upon the way the gear is used and may catch a variety of demersal species.

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 (NRC) reports, individual types of trawls and dredges were not evaluated. The impacts of bottom gillnets, traps, and longlines were limited to warm or shallow water environments with rooted aquatic vegetation or “live bottom” environments (e.g., coral reefs).

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 Fixed Gear Sector as allocated target species under provisions of the FMP. A comparison of depth-related demersal fish assemblages of Georges Bank, Gulf of Maine, and southern New England 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 Fixed Gear Sector 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), which 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 Fixed Gear Sector 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 has 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. 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 may also occur in the water column.

Population Status: The inshore GOM stock appears to be relatively distinct from the offshore cod stocks on the banks of the Scotian Shelf and Georges Bank based on tagging studies. GOM cod spawning stock biomass has increased since the late 1990’s from 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 they descend to the seafloor. Most remain on the bottom after this descent, and there is no evidence of a subsequent diel, vertical migration. Adults tend to move in schools, usually near the bottom, but also occur in the water column. .

Population Status: GB cod are 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. In the western North Atlantic, this demersal gadoid species is distributed from Cape May, New Jersey to the Strait of Belle Isle, Newfoundland, 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. In winter, haddock prefer deeper waters and tend to move shoreward in summer. 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. Haddock spawn over various substrates including rocks, gravel, smooth sand, and mud. Eggs are broadcast and fertilized near the bottom. Fertilized eggs are buoyant and remain in the water column where subsequent development occurs. Larvae metamorphose into juveniles in roughly 30 to 42 days at lengths of 2 to 3 cm. Small juveniles initially live and feed in the epipelagic zone. Juveniles remain in the upper part of the water column for 3 to 5 months. Juveniles visit the ocean bottom in search of food. Once suitable bottom habitat is located, juveniles settle into a demersal existence. Haddock do not make extensive seasonal migrations.

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. 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. According to GARM III, the GOM fishery does not target haddock. 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.

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. 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 seafloor 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.

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 for winter flounder exist from the Gulf of Maine to the Mid-Atlantic Bight. In U.S. waters, the resource is assessed and managed as three stocks including the GOM, SNE/MA, and GB stocks. Adult GOM winter flounder migrate inshore in the fall and early winter and 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 was 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: The GB yellowtail flounder stock is 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 was 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°C, and peaks when temperatures are approximately 4.5 to 6°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). 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 fishing activities by the Fixed Gear Sector.

| 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 $< \frac{1}{2} B_{MSY}$ 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 $< \frac{1}{2} B_{MSY}$ and $F < F_{MSY}$ | Ocean Pout Halibut |
| Not Overfished but Overfishing Biomass $> \frac{1}{2} B_{MSY}$ and $F > F_{MSY}$ | GOM Cod Southern Windowpane |
| Not Overfished and not Overfishing Biomass $> \frac{1}{2} B_{MSY}$ and $F < F_{MSY}$ | Redfish Plaice GB Haddock GOM Haddock |
| Unknown | GOM Winter Flounder |

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 in the Northeast Region

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:

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

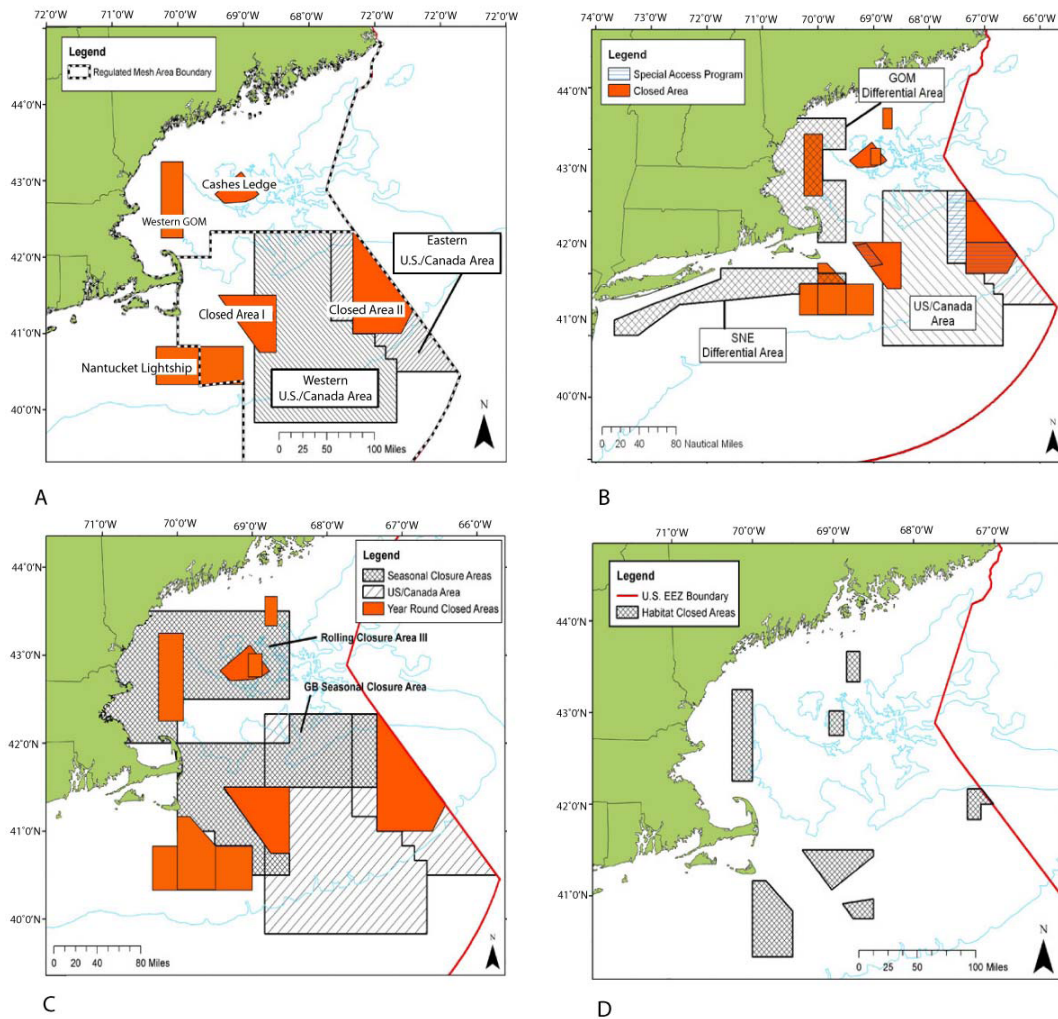


Figure 4.2.4-1 Northeast Multispecies Closed Areas and United States/Canada

4.2.5 Interaction between Gear and Allocated Target Species

The Fixed Gear Sector has been operating under an approved Operations Plan since FY 2006. The Fixed Gear Sector reported that in FY 2006, the one vessel in the Fixed Sector was allocated 123,458 lbs (56 mt) of live weight GB cod and made a single trip during which it caught and retained one 5-lb cod and discarded one 1-lb cod (Tables 4.7 and 4.8, Georges Bank Cod Fixed Gear Sector March

2009). For FY 2007, the 16 vessels then in the Sector were allocated 1,699,985 lbs (771 mt) of live weight GB cod and caught 923,760 lbs (419 mt), or 54.3 percent of its ACE. Specifically, 752,431 lbs (341 mt) were landed and converted into 896,988 lbs (407 mt), of live weight, GB cod; and 26,772 lbs (12 mt) of GB cod were discarded due to predation or sublegal size. GB cod accounted for nearly 41 percent of the total weight of fish landed by the Fixed Gear Sector in FY 2007. For FY 2008, the 33 vessels then in the Fixed Gear Sector were allocated 3,152,802 lbs (1,430 mt) of live weight GB cod and by September 30, 2008, had caught 724,814 lbs (329 mt) or 23 percent of its ACE. Specifically, 571,728 lbs (259 mt) were landed and converted into 686,717 lbs (311 mt) of live weight GB cod and 38,097 lbs (17 mt) of GB cod were discarded due to predation or sublegal size (NMFS 2009d)

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. The Fixed Gear Sector would primarily use gillnets, but would also use longlines and jigs.

4.3 NON-ALLOCATED TARGET SPECIES AND BYCATCH

Non-allocated target species and bycatch are defined in Section 1.2 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 Fixed Gear Sector 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. Monkfish may be discarded when regulations or market conditions constrain the amount of the catch that can be landed. Spiny dogfish, which tend to be relatively abundant in catches, may be landed but are often the predominant component of the discarded bycatch.

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 an 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 results in 2006. Future surveys will 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 |

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

Notes:

^a as adopted by the NEFMC June, 2009

^b provisionally added to list of stocks not allocated

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 the 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 the trip limit. 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 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).

Regionally, 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 Fixed Gear Sector for groundfish. Detailed information about skate fisheries 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 this EA, dogfish have the potential for interaction with all gear types expected to be used by the Fixed Gear Sector. 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 trawls. Only cod and white hake are caught in significant numbers by gillnets.

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

Notes:

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

^b discards not available for other gear

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

The Fixed Gear Sector has been operating under an approved Operations Plan since FY 2006. The Fixed Gear Sector reported that in during FY 2007 and FY 2008 (through September 30, 2008) catch of non-allocated target species and bycatch generally followed the historic pattern described for the fleet. In FY 2007, skate wings accounted for 23.62 percent of the total weight of fish landed, followed by monkfish with 9.78 percent. The discards were predominantly spiny dogfish (1,159,067 lbs, or 91.25 percent of all discards), followed by GB cod (2.11 percent) and monkfish (2.10 percent). The monkfish discards were primarily a result of trip limits. All other species accounted for less than 1 percent of the total fish discarded (NMFS 2009d).

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 Fixed Gear Sector. 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 Fixed Gear Sector.

| 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 Georges Bank Cod Fixed Gear Sector | |
|--|---------------|
| Species | Status |
| Cetaceans | |
| North Atlantic right whale (<i>Eubalaena glacialis</i>) | Endangered |
| Humpback whale (<i>Megaptera novaeangliae</i>) | Endangered |
| Fin whale (<i>Balaenoptera physalus</i>) | Endangered |
| Sei whale (<i>Balaenoptera borealis</i>) | Endangered |
| Blue whale (<i>Balaenoptera musculus</i>) | Endangered |
| Sperm whale (<i>Physeter macrocephalus</i>) | Endangered |
| Minke whale (<i>Balaenoptera acutorostrata</i>) | Protected |
| Pilot whale (<i>Globicephala</i> spp.) | Protected |
| Risso's dolphin (<i>Grampus griseus</i>) | Protected |
| Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>) | Protected |
| Common dolphin (<i>Delphinus delphis</i>) | Protected |
| Spotted dolphin (<i>Stenella frontalis</i> .) | Protected |
| Bottlenose dolphin (<i>Tursiops truncatus</i>) ^a | Protected |
| Harbor porpoise (<i>Phocoena phocoena</i>) | 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 Georges Bank Cod Fixed Gear Sector | |
|--|-------------------------|
| Species | Status |
| Sea Turtles | |
| Leatherback sea turtle (<i>Dermochelys coriacea</i>) | Endangered |
| Kemp's ridley sea turtle (<i>Lepidochelys kempi</i>) | Endangered |
| Green sea turtle (<i>Chelonia mydas</i>) | Endangered ^b |
| Loggerhead sea turtle (<i>Caretta caretta</i>) | Threatened |
| Hawksbill sea turtle (<i>Eretmochelys imbricate</i>) | Endangered |
| Fish | |
| Shortnose sturgeon (<i>Acipenser brevirostrum</i>) | Endangered |
| Atlantic salmon (<i>Salmo salar</i>) | Endangered |
| Pinnipeds | |
| Harbor seal (<i>Phoca vitulina</i>) | Protected |
| Gray seal (<i>Halichoerus grypus</i>) | Protected |
| Harp seal (<i>Phoca groenlandicus</i>) | Protected |
| Hooded seal (<i>Cystophora cristata</i>) | Protected |

Note:

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

^b Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever 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 Fixed Gear Sector. Background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and longline types) can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Marine Turtle Expert Working Group (TEWG) 1998, 2000; NMFS and USFWS 2007a, 2007b; Leatherback TEWG 2007), recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring et al. 2006; 2007), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002).

The Fixed Gear Sector has been operating under an approved Operations Plan since FY 2006. Based on information available for FY 2006 and FY 2007, operation of the Fixed Gear Sector has resulted in the take of 15 marine mammals, including seven gray seals, five harbor porpoises, and three unidentified seals. Each of these takes resulted from sink gillnet gear in 2007 and each animal died as a result of that take. No sea turtles have been reported as having interactions with gear deployed by the Fixed Gear Sector during that time (NMFS 2009d).

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 was 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 was 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).

The Atlantic Large Whale Take Reduction Plan (ALWTRP) was 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 Fixed Gear Sector 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. Although there are additional species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the Fixed Gear Sector, impacts to these species are still considered due to their range and similarity of behaviors to species that have been adversely affected.

Shortnose sturgeon are benthic fish that mainly occupy the deep channel sections of large rivers. 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 Fixed Gear Sector would not operate in or near the rivers where concentrations of shortnose sturgeon are most likely found, it is highly unlikely that the Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector 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 may be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery, and therefore the Fixed Gear Sector, 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 Fixed Gear Sector 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.

| 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 | <p>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:</p> <ul style="list-style-type: none"> a. Less than 50 percent of any marine mammal stock's PBR level, or b. More than 1 percent of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator would determine whether the incidental serious injury or mortality is "remote" by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator. |

Interactions between gear and a given species occur when fishing gear overlaps both spatially and trophically with the species' niche. Spatial interactions are more "passive" and involve 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.

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 deployed 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.

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 Harbor Porpoise Take Reduction Plan (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 still likely occur under the Proposed Action, but would be similar to those in the Common Pool.

| 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 | 1,502 | 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 |
| | Atlantic mixed species trap/pot ^c | unknown | White-sided dolphin, WNA ^a |
| | | | Fin whale, WNA ^d |
| Category III | Northeast/Mid- Atlantic bottom longline/hook- and-line | 46 | Humpback whale, GOM |
| | | | 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.

4.5 HUMAN COMMUNITIES/SOCIAL-ECONOMIC ENVIRONMENT

This EA considers the formation of the Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector participants themselves and the ports which they may frequent.

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 them 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 Georges Bank Cod Fixed Gear Sector

The Fixed Gear Sector would be a group of limited access Northeast multispecies (groundfish) permit holders who are voluntarily working together as a Sector under the terms described in the Amendment 16 to the Northeast Multispecies FMP. These permit holders collectively own approximately 95 permits, which are expected to be fished by 49 vessels (active non-lease). If approved, FY 2010 would be the fifth year the Fixed Gear Sector would operate.

Fixed Gear Sector vessels (all of whom fish with either gillnets or hook gear) hail from Chatham or Harwichport, Massachusetts, and currently fish EEZ waters throughout the Northeast region. Chatham

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

4.5.2.1 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 4.5.2-1). 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 4.5.2-2).

| TABLE 4.5.2-1 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 4.5.2-2 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 |

4.5.2.2 Harwichport, Massachusetts

Harwichport (41.67°N, 70.08°W) is located in Barnstable County, 15 miles east of Hyannis along Highway 28, in the Barnstable Town metro area. The town of Harwich is made up of seven villages at the edge of Cape Cod. These include the North, South, East and West Harwiches; Harwich Center; Harwichport; and Pleasant Lake (Cape Cod Connection 2007).

History

Harwich was settled around 1665 and was originally known as Satucket until it was incorporated as a town in 1694. The town was once a shipbuilding and whaling center. When the whaling industry collapsed due to the discovery of terrestrial sources of oil, the community shifted its emphasis to cod fishing. By 1802, 15 to 20 ships were shore fishing. Another four ships were cod fishing in Labrador and Newfoundland. By 1851, there were 48 ships employing 577 men and bringing in thousands of tons of cod and mackerel. By the latter part of the 19th century, the decline of the fishing industry in Harwich was due to increases in the size of ships that surpassed the ability of the shallow port to house them. As a result, residents turned to the development of cranberry bogs and resorts for summer tourism.

Cranberry farming continues to be the biggest industry in Harwich. The town's population triples during the summer season, with visitors arriving to enjoy local freshwater and saltwater beaches, fishing, bird watching, scuba diving, and sailing.

Commercial Fishing

There are approximately 735 boats either moored or docked in Harwichport harbors. Of these, 735 boats, approximately 35 to 40 are small commercial fishing vessels, and there is an estimated transient population of 68 vessels. Almost all are involved in single-day hook fishing trips, mostly for groundfish (such as cod and haddock). The longline fishery has also provided quality fish to Cape Cod for hundreds of years.

The most valuable landings in Harwichport were from the “Other” species grouping, followed by groundfish. The landings of both of these groups was considerably less in 2006 than the average landed values for the period 1997 to 2006 (Table 4.5.2-3). The number of homeported vessels in Harwichport increased from 55 in 1998 to 65 in 2002, and then fell again to 48 in 2006 (Table 4.5.2-4). The number of vessels with city owners in Harwich showed a similar trend, but with fewer vessels, indicating that many vessels ported in Harwich have owners in other communities.

| TABLE 4.5.2-3 Dollar Value of Federally Managed Groups Landed in Harwichport | |
|---|--|
| Federal Group | Rank Value of Average Landings from 1997-2006^c |
| Other ^a | 1 |
| Large-mesh Groundfish ^b | 2 |
| Scallop | 3 |
| Lobster | 4 |
| Summer Flounder, Scup, Black Sea Bass | 5 |
| Squid, Mackerel, Butterfish | 6 |
| Bluefish | 7 |
| Dogfish | 8 |
| Monkfish | 9 |
| Skate | 10 |

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 4.5.2-4 Commercial Fishing Trends in Harwichport | | |
|---|--|---|
| Year | Number of vessels with Harwichport homeport | Number of vessels whose owner receives mail in Harwichport |
| 1997 | 57 | 30 |
| 1998 | 55 | 29 |
| 1999 | 56 | 33 |
| 2000 | 60 | 37 |
| 2001 | 64 | 40 |
| 2002 | 65 | 45 |
| 2003 | 58 | 37 |
| 2004 | 59 | 41 |
| 2005 | 55 | 38 |
| 2006 | 48 | 38 |

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 total 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 member's 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 may 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 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 may 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 after 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 the 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 Fixed Gear Sector 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 to 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 Georges Bank Cod Fixed Gear Sector Relative to the Effects of the Common Pool

| Elements of Operation Plan | Valued Ecosystem Components (VECs) | | | | | |
|--|------------------------------------|--------------------------|--|---------------------|-------------------|---------------------|
| | Physical Environment | Biological Environment | | | Human Communities | |
| | 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 | Negl | Likely L+ | L+ | Likely L- | + | + |
| Seasonal Closed Area on Georges Bank | Negl | Negl | Negl | L- | + | Likely + |
| Gulf of Maine Closures ⁸ | 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 | L+ | L+ | Negl | L+ | Likely L+ | L+ |

⁸ 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 Georges Bank Cod Fixed Gear Sector Relative to the Effects of the Common Pool | | | | | | |
|--|------------------------------------|--------------------------|--|---------------------|-------------------|---------------------|
| Elements of Operation Plan | Valued Ecosystem Components (VECs) | | | | | |
| | Physical Environment | Biological Environment | | | Human Communities | |
| | Physical Habitat (incl. EFH) | Allocated Target Species | Non-allocated Target Species and Bycatch | Protected Resources | Ports | Sector Participants |
| Sector-specific Exemptions | | | | | | |
| Number of Hooks | Negl | Negl | Negl | Negl | L- | L+ |
| 50 nets per trip limit | Negl | Negl | L- | Negl | L+ | L+ |
| Majority of the 120-day block out for gillnets | Likely Negl | Negl | Negl | L- | L+ | L+ |
| Summary of Impacts | Negl | Negl | Negl | Likely L- | L+ | L+ |

| Key to TABLE 5.1-1 | | | |
|--|---|---|---|
| Impact Definition | | | |
| VEC | Direction | | |
| | Positive (+) | Negative (-) | Negligible (Negl) |
| Allocated target species, other landed species, bycatch 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 | | |
| <div><div>Negative (-)</div><div>Negligible (NEGL)</div><div>Positive (+)</div><div><div>High</div><div>Low</div><div>Low</div><div>High</div></div></div> | | | |

5.1.1 Physical Environment/Habitat/EFH

5.1.1.1 Proposed Action

For the purpose of this EA, the physical habitat is defined as the sub-regions comprised of the Gulf of Maine, Georges Bank, the southern New England/Mid-Atlantic areas, and the continental slope. EFH is defined by the SFA as “[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.”

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 Fixed Gear Sector 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 Fixed Gear Sector 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. While this could result in a slight increase in overall gear days, it is expected that this exemption would result in a negligible impact to the physical habitat and EFH since the primary gear type (gillnet) would result in little impact.

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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector Harvest Rules Summary for Physical Habitat | | |
|---|--|--|
| Summary Category | Harvest Rules Assigned to the Summary Category | Impacts |
| Quota Management | <ul style="list-style-type: none"> Full Retention of Legal Sized Fish Target Quotas Trip Limits | 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 | <ul style="list-style-type: none"> Not Applicable | 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Use non-mobile fishing gear (i.e., gillnets, hook & line gear) | Sector members would only use gear known to have minimal interactions with habitat, therefore this harvest rule has a low positive effect to physical habitat/EFH, as compared to the range of gear used by the Common |

Georges Bank Cod Fixed Gear Sector-Requested Exemptions

In addition to the universal exemptions for all sectors under Amendment 16, the Fixed Gear Sector has requested three exemptions to rules that apply to Common Pool fishermen. Impacts to the physical environment from each exemption are individually assessed in this section.

1) Exemption from the limit on the number of hooks that may be fished

The existing hook limit restriction serves to reduce fishing effort, fishing mortality, and the potential that gear could be used to “hold” fishing ground. An exemption from this would allow the Fixed Gear Sector to fish an unlimited number of circle hooks a day. Since longlines have a low impact on the physical habitat, this exemption would result in negligible impacts on the physical habitat/EFH.

2) Exemption from regulations prohibiting the hauling of more than 50 nets per trip

The net hauling restriction serves to distribute a fixed fishing effort among more fishermen. Because the Fixed Gear Sector members would still be bound by ACE and existing net limits, the exemption would allow them to increase efficiency when fishing under DAS. In addition, as discussed in Section 4.1.6, bottom gillnets have low impacts on physical habitats (Morgan and Chuenpagdee 2003). Therefore, any impacts to physical habitat/EFH would be negligible.

3) Exemption from the majority of 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 Fixed Gear Sector members from the 120-day block out could increase the CPUE and thereby decrease fishing time and bottom contact time for the fishing gear. Since Fixed Gear Sector members would operate under an ACE limit, 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, as the Fixed Gear Sector would have the ability to fish during the majority of the 120-days during the year if ACE were not attained. Therefore, for the purposes of this EA it was conservatively assumed that this exemption would result in a minor increase in gear days. Nevertheless, gillnets result in low impacts to the physical habitat. As a result, it is expected this exemption would likely result in a negligible impact to physical habitat/EFH with implementation of the Fixed Gear Sector Operations Plan.

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

Under the Proposed Action, Fixed Gear Sector would generally have a negligible 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 Fixed Gear Sector 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 gear restriction harvest rule would have a low positive effect on physical habitat/EFH since the gillnet and hook and line gear that would be used by the Fixed Gear Sector has minimal interactions with habitat as compared to the range of gear used by the Common Pool.

As discussed in Section 4.1.6, bottom gillnets and longlines have low impacts (Morgan and Chuenpagdee 2003). Since the Fixed Gear Sector would use hook and line, longline, and gillnet gear, any habitat impacts would be low, and 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.

In addition, the Fixed Gear Sector would be assigned an ACE for each of the Northeast multispecies stocks, which would require that they stop fishing once their ACE has been reached. It is expected that the use of universal exemptions, harvest rules, and the 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, this reduction could be offset by a slight increase in gear days due to the ability to target specific stocks. 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, especially since the gear types used (e.g., handlines, gillnets) have little if any impact on physical habitat. Therefore, the overall impact to physical habitat and EFH of the Proposed Action would be negligible.

5.1.1.2 No-Action Alternative

The No-Action Alternative is the disapproval of the Operations Plan. As part of this alternative, all Fixed Gear Sector vessels would return to in the Common Pool under the regulations of Amendments 13 and 16, FY 2010 Common Pool rules, and framework adjustments to the Northeast Multispecies FMP. This Sector has existed for several years.

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 could be reduced to a minor degree relative to the level that would exist if the Fixed Gear Sector were approved. However, these impacts would be negligible due to the gear type used by these vessels.

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 Fixed Gear Sector would operate under an ACE for 14 groundfish stocks (see Section 4.2). There are up to 49 active vessels that would comprise the Fixed Gear Sector for FY 2010. Prior to 2006, participants in the proposed Fixed Gear Sector 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 flounder 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 Fixed Gear Sector 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 discards 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 Fixed Gear Sector 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 Fixed Gear Sector 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 3.1.5 provides a description of the harvest rules of the Fixed Gear Sector 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.

| TABLE 5.1.2-2 Georges Bank Cod Fixed Gear Sector Harvest Rules Summary for Allocated Target Stocks | | |
|---|--|--|
| Summary Category | Harvest Rules Assigned to the Summary Category | Impacts |
| Quota Management | <ul style="list-style-type: none"> Full Retention of Legal Sized Fish Target Quotas Trip Limits | 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 | <ul style="list-style-type: none"> Not Applicable | 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 | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Use non-mobile fishing gear (i.e., gillnets, hook & line gear) | Gear restriction limits gear types and reduces negative impacts on sublegal fish; therefore this harvest rule has a low positive effect to allocated target stocks, as compared to the range of gear used by the Common Pool. |

Georges Bank Cod Fixed Gear Sector-Requested Exemptions

Because the Fixed Gear Sector would not be constrained by the DAS reduction for groundfish (other than monkfish) 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. 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 Fixed Gear Sector to fully utilize and manage their allocations, avoid overfishing, and focus their efforts on filling their ACE for allocated target stocks.

Fixed Gear Sector members would implement all monitoring and reporting requirements as mandated in Amendment 16 and any additional requirements developed by the Fixed Gear Sector. An expected effect is the reduction in the potential to exceed target mortality rates through real-time management by the Fixed Gear Sector. 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 Fixed Gear Sector represents a small proportion of the fleet. So in the context of biological effects, the impacts of the Fixed Gear Sector Operations Plan, as compared to operations within the Common Pool, would represent a negligible change to a small proportion of the entire groundfish fleet.

The Fixed Gear Sector requests specific exemptions, as outlined in Section 3.1.4.2. A description of the potential effects from each specific exemption is provided below.

1) Exemption from the limit on the number of hooks that may be fished

The existing hook limit restriction functions to reduce fishing effort, fishing mortality, and the potential that gear could be used to “hold” fishing ground. Vessels operating within a Sector would achieve comparable conservation benefits with ACEs for each species. However, exempting Sector vessels from the hook limit measure could result in longer soak times or gear left unattended to hold fishing ground, potentially resulting in groundfish mortality that is neither reported nor applied to Sector ACE. This impact would be limited, however, by the relatively small number of vessels operating within the Fixed Gear Sector.

Hook fishing is noted by NMFS to strongly limit catch of “flatfishes,” which are the category of stocks of greatest conservation concern. Increasing the number of hooks per set has the potential to protect weaker stocks of flatfish and thus provide some conservation benefits to these species relative to targeting the multispecies complex with some other gear types. The effects to groundfish, particularly flatfishes, would be limited by the ACE allocated to the Fixed Gear Sector since Sector vessels must cease fishing in that stock area with any gear capable of catching groundfish once it achieves their ACE unless the Sector obtains more ACE. In comparison, vessels operating within the Common Pool would be constrained by DAS allocation and further limited by the number of hooks that may be fished. Allowing this exemption would potentially increase catch efficiency of Fixed Gear Sector vessels relative to the Common Pool. However, members of the Georges Bank Cod Hook Sector that have operated under this exemption in the past have not caught their entire allocation in any year since the inception of that Sector; therefore, it is reasonable to expect that the ACE would not likely be reached before the end of the fishing year. Thus, exemption from the limit on the number of hooks may result in a net increase in fishing effort. However, there are relatively few vessels that would be exempted from the hook limit compared to the entire groundfishing fleet. Any impacts to allocated target stocks are expected to be negligible when compared to the same vessels when operating as part of the Common Pool.

2) Exemption from regulations prohibiting the hauling of more than 50 nets per trip

This exemption would remove the restriction on the number of nets that could be hauled when fishing to a possible maximum of 150 nets, which is already the maximum number of nets now allowed in possession. In comparison, vessels fishing within the Common Pool would be restricted to hauling only 50 nets per trip when fishing the Georges Bank RMA under the DAS system. The impacts of this exemption on allocated target stocks would be limited by the relatively small number of vessels operating within the Fixed Gear Sector and their use of the exemption only when specifically targeting monkfish under the Monkfish FMP. Additional net use while targeting monkfish could increase the by-catch of allocated target stocks during a monkfish DAS for Sector participants in comparison to Common Pool fisherman. The allocated target stocks caught while targeting monkfish would count against the Sector's ACE for those stocks. Therefore, the impact to target species resulting from this exemption would be negligible when compared with the same vessels targeting monkfish as part of the Common Pool and restricted to 50 hauls per day.

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

These block out requirements were 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 seasonal 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 would be to allow gillnet vessels within the Fixed Gear Sector to redistribute fishing effort over the year, as opposed to adhering to the entire block out. Without input controls on fishing effort, as there would be within the Common Pool, it is reasonable to expect that Sector vessels could exercise an option to increase fishing effort if they have not achieved their ACE for any stock within that stock area. However, the effects to allocated target stocks would be controlled by ACEs. In addition, the Fixed Gear Sector is not requesting exemption for the spawning block (20 days between March 1 and May 31) and would lessen the potential for harvest impacts for spawning fish.

The resulting effect of Sector operations with exemption from the block out relative to those vessels operating within the Common Pool, regardless of any changes in fishing effort, would be a negligible impact on allocated target stocks due to the overarching constraint on mortality imposed by the ACE. The Fixed Gear Sector 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.

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

In general, the anticipated effect of Fixed Gear Sector 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 Fixed Gear Sector. Impacts associated with universal exemptions and Operations Plan would generally expect to be positive to negligible, although Gulf of Maine closures could result in a low negative impact to allocated target species.

The Fixed Gear Sector requested exemptions are expected to produce possible increases in fishing effort, a redistribution of fishing effort over the year and increases in monkfish catches through hauling a greater number of nets, resulting in negligible impacts to allocated target fisheries.

Thus, the overall impact of Fixed Gear Sector operations to allocated target stocks is conservatively 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 Fixed Gear Sector would not have an ACE for 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 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. 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 otherwise mandated by Amendment 16.

It is reasonable to expect that vessels fishing within the Common Pool (No-Action) would have a negligible impact on allocated target stocks compared to the proposed Fixed Gear Sector operations (Proposed Action).

5.1.3 Non-allocated Target Species and Bycatch

5.1.3.1 Proposed Action

Under the Proposed Action, the Fixed Gear Sector would receive an ACE, which would set absolute maximum poundage of each allocated target stock that the Fixed Gear Sector would be allowed to catch. Monkfish, skates, and spiny dogfish are the predominant non-allocated target species (i.e., monkfish and skates) or bycatch (i.e., dogfish) caught along with allocated groundfish 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 Fixed Gear Sector 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 Fixed Gear 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. 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 Fixed Gear Sector 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 the Fixed Gear Sector, both landings and discards of 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 can be expected from vessels operating within the Fixed Gear Sector.

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 Fixed Gear Sector 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 participant⁹ would have all groundfish catch (including calculated discards) counted against the sector's ACE. Thus, a sector vessel fishing¹⁰ 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 activities¹¹ 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

⁹ 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)

¹⁰ Outside an exempted fishery

¹¹ With non-exempt gear and outside exempted fisheries (excluding recreational fishing)

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 Fixed Gear Sector would operate under an ACE for 14 Northeast groundfish stocks (see Section 4.2). Once the Fixed Gear Sector 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 Fixed Gear Sector 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 ACL allocated to the entire fleet. The Fixed Gear Sector represents a small proportion of the entire groundfish fleet. So in the context of biological effects, the Fixed Gear Sector would represent a small positive change in a small proportion of the groundfish fleet compared to overall operations of the multispecies fishery.

The anticipated effect of Fixed Gear 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. 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) in the Common Pool.

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 sector 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. 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 Fixed Gear Sector 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 are allowed in the area, so fishing activity is not completely excluded and groundfishing is allowed in other areas during this timeframe. Therefore, this exemption would result in a negligible impact on allocated target species 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 stocks, 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 allow targeting of allocated target species when fishing effort has been more likely to focus on other fisheries. During the closure, other types of fisheries have been allowed in 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector Harvest Rules for Non-allocated Target Species and Bycatch | | |
|---|--|---|
| Summary Category | Harvest Rules Assigned to the Summary Category | Impacts |
| Quota Management | <ul style="list-style-type: none"> ▪ Full Retention of Legal Sized Fish ▪ Target Quotas ▪ Trip Limits | 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 | <ul style="list-style-type: none"> ▪ Not Applicable | 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 | <ul style="list-style-type: none"> ▪ 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 affect the fishing effort or CPUE, and would result in a negligible impact to non-allocated target species and bycatch. |
| Gear Restriction | <ul style="list-style-type: none"> ▪ Use non-mobile fishing gear (i.e., gillnets, hook & line gear) | This sector has not reached its ACE in previous years, and it is unlikely fishing effort would cease before the end of the fishing year. The impacts associated with this harvest rule would be negligible to non-allocated target species and bycatch because the catch rate of these species would not increase or decrease as a result of this harvest rule. |

Georges Bank Cod Fixed Gear Sector-Requested Exemptions

For purposes of this analysis, 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 Fixed Gear Sector 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.

Fixed Gear Sector 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 potential to exceed target mortality rates, and therefore also non-allocated target species and bycatch, through real-time management by Fixed Gear Sector. Vessels operating within the Common Pool (the No-Action Alternative) would receive trip limits without the allocation constraints imposed by ACEs.

In addition to the universal exemptions, the Fixed Gear Sector requests specific exemptions, as outlined in Section 3.1.4.2. 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 limit on the number of hooks that may be fished

Exempting Fixed Gear Sector vessels from the hook limit measure could result in longer soak times or gear left unattended to hold fishing ground, potentially resulting in higher rates of mortality for non-allocated target species and bycatch. The effects to non-allocated target species and bycatch would be limited by the ACE allocated to the Fixed Gear Sector since Sector vessels must cease fishing in that stock area with any gear capable of catching groundfish once they attain ACE for any allocated species in that stock area. However, members of the Georges Bank Cod Hook Sector that have operated under this exemption in the past have not caught their entire allocation in any year since inception of that Sector; therefore, it is reasonable to expect that the ACE would not likely be reached before the end of the fishing year. Thus, exemption from the limit on the number of hooks may result in a net increase in fishing effort. Because there are relative few vessels that would be exempted from the hook limit compared to the entire groundfishing fleet, any impacts to non-allocated species and bycatch are expected to be negligible.

2) Exemption from regulations prohibiting the hauling of more than 50 nets per trip.

This exemption would remove the restriction on the number of nets that could be hauled when fishing to a possible maximum of 150 nets, which is also the maximum number of nets now allowed in possession. In comparison, vessels fishing within the Common Pool would be restricted to hauling only 50 nets per trip when fishing in the Georges Bank RMA under the DAS system. The exemption would only apply when specifically targeting monkfish under the Monkfish FMP on Georges Bank. Additional net use while targeting monkfish could increase the catch of monkfish and the bycatch of skates and dogfish when compared with the same vessels targeting monkfish as part of the Common Pool and restricted to 50 hauls per day. The impacts of this exemption would be limited by the relatively small number of vessels operating within the Fixed Gear Sector and their use of the exemption only when specifically targeting monkfish under the Monkfish FMP. Therefore, low negative impacts to monkfish, dogfish, and skates resulting from this exemption would likely occur when compared with the same vessels targeting monkfish as part of the Common Pool.

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

The result of this exemption is to allow gillnet vessels within the Fixed Gear Sector 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 majority of the 120-day block relative to 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 bycatch. The Fixed Gear Sector 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.

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 Fixed Gear Sector is expected to reduce the potential to exceed ACEs and therefore impacts to non-allocated target species and bycatch. The impact of the universal exemptions and harvest rule requirements under Amendment 16 are expected to be negligible for non-allocated target species and bycatch, although the exemption from trip limits may result in a low positive impact and monitoring may provide a positive indirect effect by allowing better data collection and management of the stocks in the future.

The requested Sector-specific exemptions would generally have a negligible impact, although the exemption to haul more than 50 nets per trip may lead to a low negative impact to non-allocated target species and bycatch.

The overall impact of Fixed Gear Sector operations to non-allocated target species and bycatch is conservatively expected to be negligible based on the universal exemptions, harvest rules, and Sector-specific exemptions.

5.1.3.2 No-Action Alternative

Under the No-Action Alternative, these vessels would return 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 Fixed Gear Sector 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 (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 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 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 Fixed Gear Sector 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 Fixed Gear Sector would be comprised of gillnetters and hook-and-line gear (jigs, handlines, and demersal longlines). As described in Section 4.4.4, these gear types are each considered Tier 2 fisheries (gillnets are Category I [frequent incidental mortality/injury] and longlines 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 Fixed Gear Sector 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 levels. 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 and Operations Plan Requirements

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 Fixed Gear Sector 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 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 result in a potential increased number of potential 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 they 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 Fixed Gear Sector Operations Plan. The summary category for each of these harvest rules and their likely impacts are provided in Table 5.1.4-1.

| TABLE 5.1.4-1 Fixed Gear Sector Harvest Rules Summary for Protected Resources | | |
|--|--|--|
| Summary Category | Harvest Rules Assigned to the Summary Category | Impacts |
| Quota Management | <ul style="list-style-type: none"> ▪ Full Retention of Legal Sized Fish ▪ Target Quotas ▪ Trip Limits | 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 | <ul style="list-style-type: none"> ▪ Not Applicable | 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 | <ul style="list-style-type: none"> ▪ 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 | <ul style="list-style-type: none"> ▪ Use non-mobile fishing gear (i.e., gillnets, hook & line gear) | Gear restrictions require that Fixed Gear Sector members would only pursue groundfish with fixed gear (i.e., not trawl gear). Thus, the Sector may use hook-and-line gear and gillnets, whereas the Common Pool fishery may use these gear plus trawl gear. Gillnets are known to interact with cetaceans, so increased use may be low negative to these species, whereas fewer trawls operating would be a benefit to turtles (low positive). In addition, this sector provides advantages to hook fishermen who may otherwise not be economically viable operating under the Common Pool. Historically, hook and line gear in the Northeast multispecies fishery has rarely interacted with protected resources. By claiming a portion of the overall groundfish ACL for hook fishermen who may otherwise not operate, there is an overall low positive impact to protected resources. |

Georges Bank Cod Fixed Gear Sector-Requested Exemptions

In addition to the universal exemptions, the Fixed Gear Sector requests specific exemptions, as outlined in Section 3.1.4.2 and discussed below.

1) Exemption from the limit of hooks that may be fished

The existing hook limit restriction serves to reduce fishing effort, fishing mortality, and the potential that gear could be used to “hold” fishing ground. An increased number of deployed circle hooks could increase CPUE, although ACE has not been achieved by the Fixed Gear Sector in the past, and it

could allow for the exploitation of underutilized stocks. For these reasons, it is likely that this exemption could increase gear days; however, hook gear is classified as Tier 2, Category III, indicating that gear interactions with protected resources rarely results in incidental mortality or injury. Although longer soak times or unattended gear could increase protected species interactions, this exemption would be expected to result in negligible impacts to protected resources.

2) Exemption from regulations prohibiting the hauling of more than 50 nets per trip

This exemption would remove the restriction on the number of nets that could be hauled when fishing to a possible maximum of 150 nets, which is also the maximum number of nets now allowed in possession. In comparison, vessels fishing within the Common Pool would be restricted to hauling only 50 nets per trip when fishing in the Georges Bank RMA under the DAS system. The Fixed Gear Sector would maintain existing gillnet limits, but seeks an exemption from the multispecies regulation that prohibits hauling more than 50 nets per trip. While day gillnet vessels are limited to 150 gillnets on the vessel or in the water (across the Georges Bank and Gulf of Maine Regulated Mesh Areas), they can only haul 50 nets while in Georges Bank. The Fixed Gear Sector seeks an exemption from the restriction that vessels in Georges Bank only haul 50 gillnets while operating on a groundfish DAS for trips where the vessel is also on a monkfish DAS. The effect of the exemption would be that sector vessels fishing both a groundfish DAS and a monkfish DAS would not be limited to hauling only 50 nets within Georges Bank. Because the Fixed Gear Sector participants would still be bound by existing net limits, any impacts to protected resources would be negligible.

3) Exemption from the majority of 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. The Fixed Gear Sector has requested exemption from the non-spawning portion of this block and would abide by the block-out of 20 days between March 1 and March 31. 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 the Fixed Gear Sector 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 Fixed Gear Sector 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 100 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.

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

The Fixed Gear Sector would be comprised of gillnetters and hook-and-line gear (jigs, handlines, and demersal longlines). The Fixed Gear Sector would be comprised of gillnetters and hook-and-line

gear (jigs, handlines, and demersal longlines). 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. Hook and line gear is generally considered to have low impacts on most protected resources. Impacts to small cetaceans and pinnipeds could occur but at present are unlikely to rise above the level of PBR.

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 Fixed Gear Sector has requested exemption to three additional regulations. Two exemptions would have a negligible impact to protected resources as they involve gear that doesn't often impact protected resources or would still require the Sector to abide by current maximum regulations. The third exemption would result in a minor increase in gear days and increase the potential that protected resources would inadvertently interact with fishing gear.

Cumulatively, if the Fixed Gear Sector is approved, impacts to protected resources from exemptions granted under Amendment 16, the Fixed Gear Sector Operations Plan, and the specific exemptions requested by the Fixed Gear Sector 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 Fixed Gear Sector's Operations Plan would not be approved and these vessels would remain within the Common Pool. If the Fixed Gear Sector 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 Fixed Gear Sector 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 would 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 Fixed Gear Sector Operations Plan.

5.1.5 Human Communities/Social/Economic Environment

The Fixed Gear Sector is 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, Fixed Gear Sector 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, Fixed Gear Sector 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 return to the Common Pool and would operate under Common Pool rules.

Human community and economic impacts may be associated with Fixed Gear Sector 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. 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 Fixed Gear Sector and Georges Bank Cod Hook Sector 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 an ability to time markets in a limited access fishery would allow Fixed Gear Sector 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 opportunity to target previously under-utilized stocks because of the removal of DAS limits may increase landings, which would 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. This can result in captains feeling pressure to fish in inclement weather or in an unsafe manner.

Through participation in a sector, fishermen would be insulated from many of the pressures that 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 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 the 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 allocated 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, 44 percent of the permits enrolled in the Fixed Gear Sector were attached to vessels which actively fished for Northeast multispecies. For FY 2010, the Fixed Gear Sector has 95 permits currently enrolled. Of those 95 permits, 52 percent are anticipated to actively fish for Northeast multispecies. While these numbers may change, the Fixed Gear Sector 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 little additional consolidation.

Redirection of Effort

If CPUE among Fixed Gear Sector 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. The increased revenue to Sector vessels would represent a positive impact however the increased competition among vessels could have a low negative impact on ports.

Increased Precision in Mortality Control

By agreeing to fish under an ACE, sector members have made 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 Fixed Gear Sector 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 Bay in May to fish in 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 Fixed Gear Sector 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 Fixed Gear Sector Harvest Rules Summary for Human Communities | | |
|--|--|--|
| Summary Category | Harvest Rules Assigned to the Summary Category | Impacts |
| Quota Management | <ul style="list-style-type: none"> Full Retention of Legal Sized Fish Target Quotas Trip Limits | 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 | <ul style="list-style-type: none"> Not Applicable | In the longer term, these harvest rules will provide a better understanding of discard rates which will reduce under-fishing of some stocks. The result would be a positive impact on both sector participants and ports. |
| Administrative | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> Use non-mobile fishing gear (i.e., gillnets, hook & line gear) | This harvest rule may employ more people in shore-side businesses to bait hooks and provide bait, resulting in likely low positive impact to ports. Use of hook gear by sector members provides access to under-exploited stock in the Haddock Special Access Program (SAP). |

Georges Bank Cod Fixed Gear Sector-Requested Exemptions

In addition to the universal exemptions for all sectors under Amendment 16, the Fixed Gear Sector 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 limits on the number of hooks that may be fished

The existing hook limit restriction serves to reduce fishing effort, fishing mortality, and the potential that gear could be used to “hold” fishing ground. The agreement of the Fixed Gear Sector to fish under an ACE provides conservation benefits equivalent to the overall effort reduction and mortality control rationale for the hook limit measure. However, exempting Fixed Gear Sector vessels from the hook limit measure could potentially result in longer soak times or gear left unattended to hold fishing ground. This could result in groundfish mortality that is neither reported nor applied to Fixed Gear Sector ACE and/or increase inter-vessel conflicts.

Without additional measures to ensure the exemption would not result in longer soak times or gear being left unattended for extended periods of time, the exemption would represent a low positive impact to Fixed Gear Sector members but a low negative impact to ports.

2) Exemption from regulations prohibiting the hauling of more than 50 nets per trip

The existing net hauling restriction serves to distribute a fixed amount of fishing related mortality among more fishermen than it would otherwise support. Because Fixed Gear Sector members would operate under an ACE, an exemption would increase their operational flexibility when fishing under DAS while maintaining the mortality control rationale for the measure. The increase flexibility should increase profit margins resulting in a low positive impact on Fixed Gear Sector participants and ports.

3) Exemption from the majority of 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 Fixed Gear Sector 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 Fixed Gear Sector fishermen. The increased revenue would represent a low positive impact on Fixed Gear Sector participants and ports relative to the Common Pool.

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 return to the Common Pool and would operate under the FY 2010 Common Pool rules. These rules, which include measures designed to rebuild 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 compared to sectors. 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 FY 2011. 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.

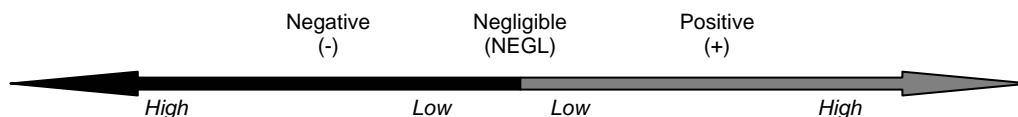
The temporal range considered for endangered and other protected species begins in the 1990's when NMFS began generating stock assessments for marine mammals and developed recovery plans for sea turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis examines the period 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 the Proposed Action

The direct and indirect effects on the VECs from the FY 2010 Fixed Gear Sector 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.

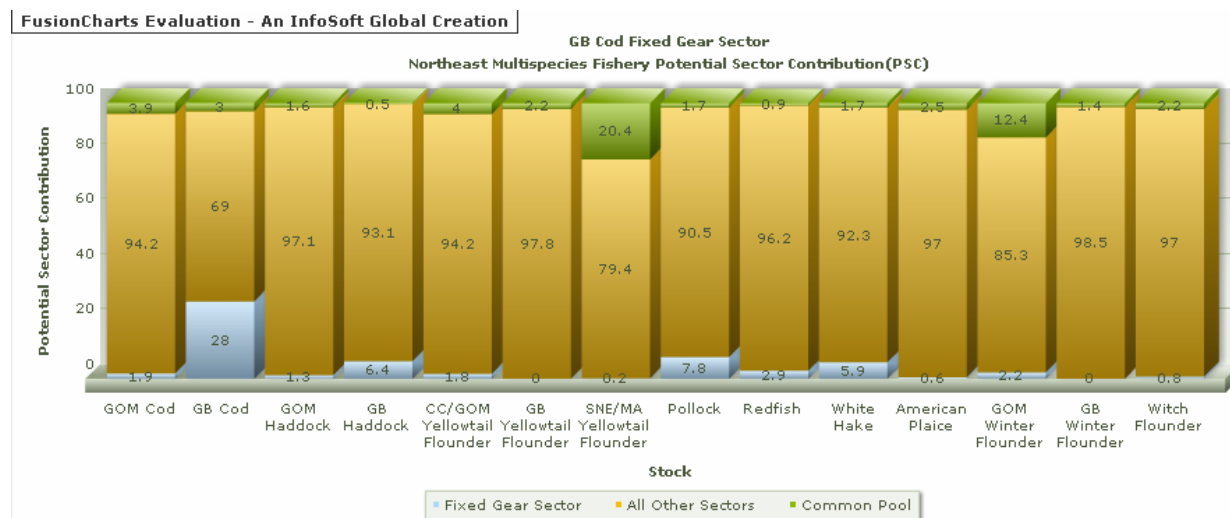
The effects of specific universal exemptions on the physical environment and habitat (including EFH) would generally be negligible or low negative. The harvest rules for the Fixed Gear Sector would also generally have a negligible impact on the physical habitat/EFH since the majority of the harvest rules are not expected to affect the number of gear days fished. The gear restriction harvest rule would have a low positive effect on physical habitat/EFH since the gillnet and hook and line gear that would be used by the Fixed Gear Sector has minimal interactions with habitat as compared to the range of gear used by the Common Pool.

The Fixed Gear Sector would fish for allocated target species with gillnet and hook and line gear. As discussed in Section 4.1.6, bottom gillnets and longlines have low impacts (Morgan and Chuenpagdee 2003). Since the Fixed Gear Sector would use hook and line, longline, and gillnet gear, any habitat impacts would be low, and the difference in the impacts of the Sector and those same vessels operating in the Common Pool would be negligible.

In addition, the Fixed Gear 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. Figure 5.2.1-1 below indicates the PSC of the permits in the Fixed Gear Sector, 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, which 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, Fixed Gear Sector 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.

Fixed Gear Sector operations and requested exemptions are expected to convert more vessel catch into landings and less into discards than would otherwise occur in the Common Pool. The magnitude of impacts to allocated target species would be controlled predominately by the ACEs for each allocated target stock. It is also expected that real-time management as proposed by the Fixed Gear Sector would reduce the potential to exceed ACEs. The Fixed Gear Sector requested exemptions are expected to produce possible increases in fishing effort, a redistribution of fishing effort over the year and increases in monkfish catches through hauling a greater number of nets, resulting in negligible impacts to target fisheries. Therefore, under the Proposed Action, the Fixed Gear Sector Operations Plan would generally have an overall negligible impact on allocated target species relative to the vessels operating under Common Pool requirements.

Figure 5.2.1-1 Georges Bank Fixed Gear Sector Potential Sector Contribution Compared to all Other Sectors and the Common Pool.



It is expected that impacts from Fixed Gear Sector 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 the Fixed Gear Sector is expected to reduce the potential to exceed ACEs and therefore control impacts to non-allocated target species and bycatch. The exemption from regulations prohibiting the hauling of more than 50 nets per trip may lead to increases in monkfish catches, resulting in likely low negative impacts to non-allocated target species and bycatch. The exemption from the limit on the number of hooks that may be fished and the block out are expected to produce possible increases in fishing effort and a redistribution of fishing effort over the year resulting in mostly negligible impacts to non-allocated target species and bycatch. Under the Proposed Action, Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector has requested exemptions to three additional regulations. Two exemptions would have a negligible impact to protected resources as they involve gear that doesn't often impact protected resources or would still require the Sector to abide by current maximum regulations. The third

exemption would result in a minor increase in gear days and increase the potential that protected resources would inadvertently interact with fishing gear. All three Sector-specific exemptions together would likely result in a low negative impact to protected resources. Cumulatively, if the Fixed Gear Sector is approved, impacts to protected resources from exemptions granted under Amendment 16, the Fixed Gear Sector Operations Plan, and the specific exemptions requested by the Fixed Gear Sector 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 Fixed Gear Sector participants and ports.

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

| 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(+) |

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 |
| NEFS-XIII | 29 (35) | 90% trawl;10%gill | Negl | Negl | Negl | Likely L(-) | L(+) | L(+) |
| Sustainable Harvest | 44 (129) | 90% trawl 10% gillnet or long or hook | 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:

- Individual sector impacts are derived from each sector's EA.
- EFH = essential fish habitat; NEFS = Northeast Fishery Sector

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.

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 (GFCPF). 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.

Sustainable Harvest Sector

Members of this Sector would primarily land their catch primarily in the ports of Boston, Chatham, Gloucester, Hyannis, New Bedford, Provincetown, and Scituate, Massachusetts; Kennebunkport and surrounding communities, Cundy's Harbor, Portland Harbor, Rockland, and Sebasco Harbor, Maine; Portsmouth and Rye, New Hampshire; and Newport and Point Judith, Rhode Island. The primary gear for this Sector would be trawl, although a limited amount (10 percent) of gillnet and/or hook gear may also be utilized. Based on the January 2010 Operations Plan, the Sustainable Harvest Sector would consist of up to 129 permits; however, it is anticipated that 44 active vessels would fish these permits. This Sector's PSC for several stocks represents approximately one-third or more of the total amount permitted for harvest by the fleet (white hake [50 percent], redfish [49 percent], GOM haddock [41 percent], American plaice [40 percent], pollock [38 percent], and witch flounder [34 percent]). This Sector's PSC represents 30 percent of GB haddock, 18 percent of GOM cod and 17 percent of GB cod. PSC's for all other stocks comprise between 7 and 12 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.

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, Matinicus, 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

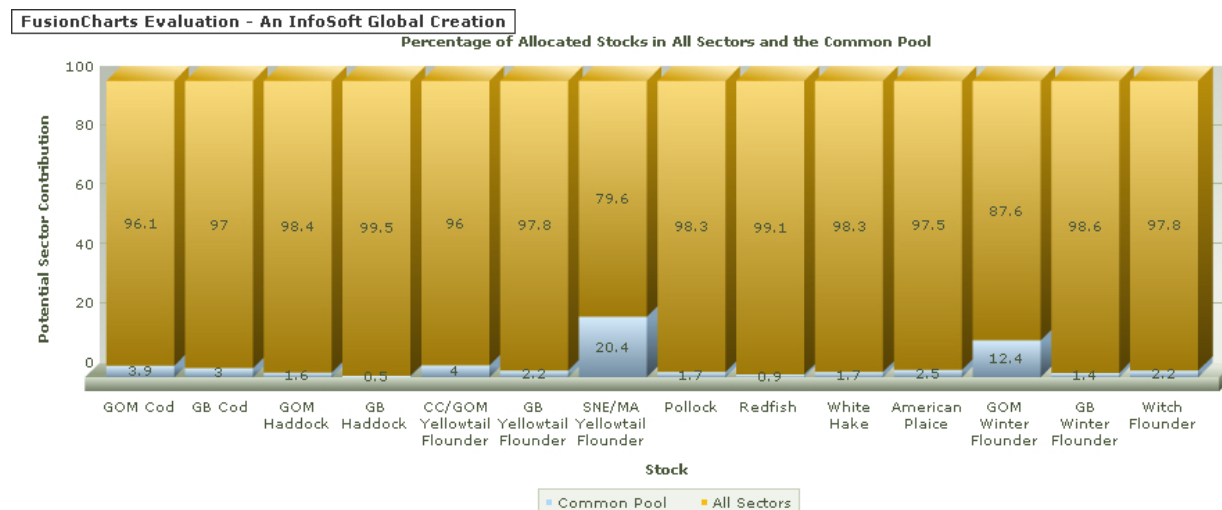
The sector-specific harvest rules, universal exemptions granted by Amendment 16, Sector-specific harvest rules, and additional requested Sector-specific exemptions have been discussed in Section 5.1 and incorporated into the Sector-specific impacts represented in Table 5.2.2-1. While the direct and indirect 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 Fixed Gear Sector) 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 | | | | | | |
|---|---|---|---|--|---|--|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 | | | | | | |
|---|---|---|--|---------------------|--|---|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 | | | | | | |
|---|---|---|--|--|--|--|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 | | | | | | |
|---|---|---|---|--|---|--|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 | | | | | | |
|---|---|--|--|---|--|--|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 | | | | | | |
|---|------------------|--------------------------|---|---------------------|-------------------------|-------------------------|
| Fishing Actions | Physical Impacts | Biological Impacts | | | Human Community Impacts | |
| | 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 Fixed Gear Sector 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 Habitat Areas of Particular Concerns (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 Fixed Gear Sector.

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 at this time.

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, 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 Fixed Gear Sector. 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 Fixed Gear Sector 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.

TABLE5.2.4-1
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 Fixed Gear Sector 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. Since the Fixed Gear Sector would use hook and line, longline, and gillnet gear, any habitat impacts would be low, and 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Fixed Gear Sector has requested exemptions from the 120-day gillnet 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 result in likely low negative impacts to protected resources. Although the Fixed Gear Sector would retain 28 percent of the ACE for GB cod and less than 8 percent for all other 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 Fixed Gear Sector 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 Fixed Gear Sector 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 Georges Bank Fixed Gear 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 the Cape Cod Commercial Hook Fishermen's Association (CCCHFA), ENTRIX, and the 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, the Northeast Fisheries Science Center, and the NEFMC Staff were consulted in preparing this EA.

8.0 COMPLIANCE WITH APPLICABLE LAWS AND EXECUTIVE ORDERS

8.1 MAGNUSON-STEVEN'S 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 Georges Bank (GB) Cod Fixed Gear 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 to 17 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 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 GB Cod Fixed Gear 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.” 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 Georges Bank Cod Fixed Gear Sector (Fixed Gear 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 Fixed Gear 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 Fixed Gear 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. The fixed gear used by Fixed Gear Sector members in the Proposed Action has minimal adverse impacts on marine habitats or EFH (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 Fixed Gear 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. The Fixed Gear Sector members would use longline, hook-and-line gear (benthic tub trawl, handlines, and rod-and-reel), and sink gillnets.

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. 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 GB Cod Fixed Gear 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 the Fixed Gear Sector for 14 stocks of groundfish, which sets a limit on the amount of groundfish that the Fixed Gear Sector can catch. Fixed Gear Sector members would be exempt from several restrictions of the FMP, however, the Fixed Gear Sector only uses fixed and hook gear, which are known to minimize interactions with habitat, protected species, and bycatch. The operation of the Fixed Gear 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. All bottom-set, longline and sink gillnet gear are considered fixed and passive because once deployed these gear do not move. 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 the Fixed Gear Sector, which sets a limit on the amount of each the 14 groundfish species that the Fixed Gear Sector can catch, while minimizing regulatory discards, resulting in positive benefits to the allocated target species, non-allocated target species, and bycatch species. Fixed Gear Sector members would be exempt from several restrictions of the FMP, however, the Fixed Gear Sector only uses fixed gear and hook gear, which are known to minimize interactions with habitat, protected species, and limit bycatch species (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 the Fixed Gear Sector members and thereby to the communities of Chatham and Harwich, Massachusetts, while at the same time meeting the conservation requirements of the FMP. The Fixed Gear Sector has operated since fishing year 2006; 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 the Fixed Gear 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 effects to the wreck of the *Portland*. Due to the minimal impact on the human environment, the GB Cod Fixed Gear Sector Operations Plan would not 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 the Fixed Gear 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?

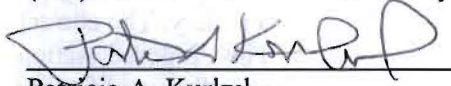
Response: The Proposed Action is not expected to threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment. In addition to the Fixed Gear Sector harvest rules, the Fixed Gear Sector would comply with all local, regional, and national laws and permitting 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 GB Cod Fixed Gear Sector Operations Plan, it is hereby determined that the approval of the FY 2010 GB Cod Fixed Gear 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
Regional Administrator Northeast Region, NMFS

Date

FEB 24, 2010

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 GB Cod Fixed Gear 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 GB Cod Fixed Gear 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 GB Cod Fixed Gear Sector in FY 2010, and to allow the benefits of sector operations to accrue to 95 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 GB Cod Fixed Gear Sector in FY 2010 is 95. 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 GB Cod Fixed Gear 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 GB Cod Fixed Gear Sector is requesting 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 days 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 GB Cod Fixed Gear Sector is requesting an exemption from the number of hooks that may be fished and exemption from the limitation on the number of gillnets that may be hauled on GB when fishing under a groundfish/monkfish DAS. These exemptions would provide vessel owners with the flexibility to adapt the number of hooks fished to existing fishing and market conditions. This exemption would also provide an opportunity to improve vessel profitability. The exemption from the number of hooks that may be fished has been granted to the GB Cod Hook Sector in every year since 2004.

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.
- 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.
- 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.
- Brown, M.W., O.C. Nichols, M.K. Marx, and J.N. Ciano. 2002. Surveillance of North Atlantic right whales in Cape Cod Bay and adjacent waters—2002. Final Report to the Division of Marine Fisheries, Commonwealth of Massachusetts. 29pp.
- Cape Cod Connection. 2005. The Villages of Harwich. Available at: <http://www.capecodconnection.com/>.
- 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.
- 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.
- Hanson J, Helvey M, Strach R. (eds). 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.
- 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. Available at: <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.
- 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.

- Mid-Atlantic Fisheries Management Council (MAFMC). 2009. Spiny Dogfish Specifications, Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis. April 9.
- 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). 2004. Northeast Region, Letter to Multispecies Permit Holders. Available at: <http://www.nero.noaa.gov/amend13/phl/amend13.pdf>.
- 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 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). 1998. Monkfish Fishery Management Plan. Available at: <http://www.nefmc.org/monk/index.html>.
- 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). 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). 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). 2006. 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). 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. Würsig, 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.
- 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.
- Sanchiroco, J.N., D. Holland, K. Quigley, and M. Fina. 2006. Catch-quota balancing in multispecies individual fishing quotas. *Marine Policy* 30:767-785.
- Sears, R. 2002. Blue whale, *Balaenoptera musculus*. Pages 112-116 in W.F. Perrin, B. Würsig, and J.G.M. Thewissen, eds. *Encyclopedia of Marine Mammals*. San Diego: Academic Press.
- 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>.
- 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.
- Szmit, K. 2005. A freezer point stalwart looks back at two others. Available at: <http://www.barnstablepatriot.com>.

- 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.
- Town of Chatham. No Date. About Chatham. Available at: <http://www.town.chatham.ma.us>.
- 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.
- 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.
- 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.