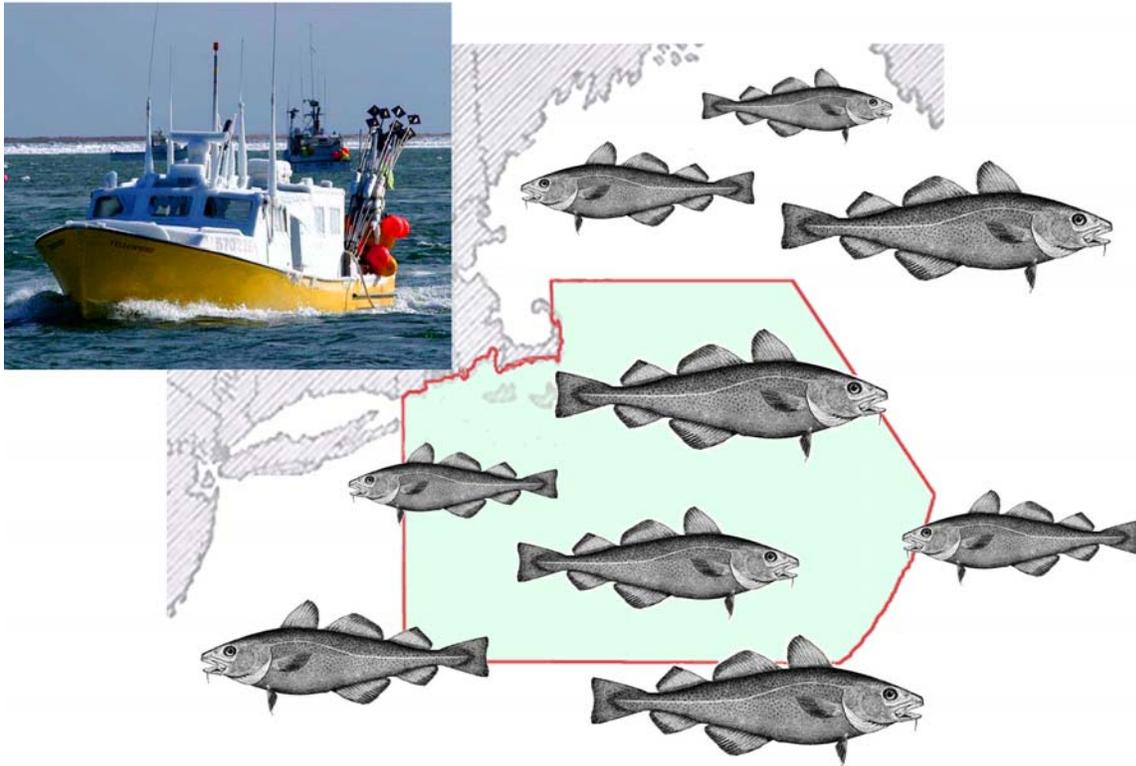


Georges Bank Cod Hook Sector *An Environmental Assessment*



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LIST OF ACRONYMS

Acronym	Definition
ALWTRP	Atlantic Large Whale Take Reduction Plan
APA	Administrative Procedure Act
BDTRP	Bottlenose Dolphin Take Reduction Plan
BRP	Biological reference points
CAI	Closed Area I
CEA	Cumulative Effect Assessment
CEQ	Council on Environmental Quality
CZMA	Coastal Zone Management Act of 1972 (USA)
CZMP	coastal zone management programs
DAS	Days-at-Sea
DPS	Distinct Population Segment
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFP	Exempt Fishing Permits
EO	Executive Order
ESA	Endangered Species Act
FEIS	Final Environmental Impact Statement
FGS	Fixed Gear Sector
FMP	Fishery Management Plan
F_{MSY}	Fishing mortality rate that would produce maximum sustainable yield
FSEIS	Final Supplemental Environmental Impact Statement
FW	Framework
FY	fishing year
GARM	Groundfish Assessment Review Meeting
GB	Georges Bank
GME/BF	Gulf of Maine/Bay of Fundy
GOM	Gulf of Maine
HPTRP	Harbor Porpoise Take Reduction Plan
IPA	
IRFA	Initial Regulatory Flexibility Analysis
lbs	pounds
LOA	length overall
LOF	List of Fishery
Magnuson Act	Magnuson-Stevens Fishery Conservation and Management Act
MARFIN	Marine Fisheries Initiative
MPA	Marine Protected Area
MRFSS	Marine Recreational Fishery Statistics Survey
MSY	maximum sustainable yield
Mt	Metric ton
NAICS	North American Industry Classification System
NE	Northeast

Acronym	Definition
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fishery Science Center
NEPA	National Environmental Policy Act
NERO	New England Regional Office
NFSC	Northeast Fishery Science Center
NMFS	National Marine Fisheries Service
NOAA	National Oceanic & Atmospheric Administration
OMB	Office of Management and Budget
OY	optimum yield
PBR	potential biological removal
QRA	Quantitative Risk Assessment
RA	Regional Administrator
RFA	Regulatory Flexibility Act
RFAA	Regulatory Flexibility Act Analysis
SAP	Special Access Program
SAR	Stock Assessment Reports
SBA	Small Business Administration
SEIS	Supplemental Environmental Impact Statement
SFA	Sustainable Fisheries Act
SNE/MA	Southern New England/Mid-Atlantic
SOC	species of concern
TAC	total allowable catch
TEWG	Turtle Expert Working Group
UNEP	United Nations Environment Programme
USFWS	United States Fish and Wildlife Service
VECs	Valued Ecosystem Components
VMS	Vessel Monitoring System
VTR	Vessel Trip Reports
WNA	Western North Atlantic(WNA)

CAPE COD COMMERCIAL HOOK FISHERMAN'S ASSOCIATION

HOOK SECTOR

1.0 INTRODUCTION

The Georges Bank (GB) Cod Hook Sector requests approval of the Hook Sector Operations Plan, and allocation of a total allowable catch (TAC) of GB cod, for the 2009, fishing year (FY) and submits this Environmental Assessment (EA) as an evaluation of the impacts. The initial sector allocation proposal for the GB Cod Hook Sector was submitted under Amendment 13 to the Northeast (NE) Multispecies Fishery Management Plan (FMP) and was originally implemented in 2004. The Operations Plan has previously been approved for FYs 2004, 2005, 2006, 2007, and 2008. This proposal does not request substantial changes to the approved 2008 GB Hook Sector Operations Plan.

1.1 The Multispecies Fishery

In 1986, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act), the New England Fishery Management Council (NEFMC) implemented the NE 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 (15) species of groundfish are managed under this plan. Twelve (12) species are managed as large mesh species based on fish size and 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, and white hake. Three species—silver hake (whiting), red hake, and offshore hake—are managed under a separate small mesh multispecies program pursuant to Amendment 12 to the NE 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: GB cod and Gulf of Maine (GOM) cod. The fishery is administered with a variety of management tools, including Days-at-Sea (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 NE Multispecies FMP (69 CFR 22906, April 27, 2004) specified a process for the formation of sectors within the NE Multispecies Fishery and for the allocation of TAC for a specific groundfish species or for DAS. This rule also authorized and implemented the GB Cod Hook Sector (Hook Sector), the first sector to be established; established the GB Cod Hook Sector Area (Hook Sector Area); specified a formula for the allocation of GB cod TAC to future sectors; and implemented restrictions that apply to all sectors.

Under the sector process, a self-selected group of 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 or effort. Allocations to a sector may be based either on catch, through TACs requiring closure of a fishery upon reaching the TAC (hard

TAC), or on effort (DAS), with allocated TACs specified for the sector. The Council may allocate an approved sector up to 20 percent of a stock's TAC. Approved sectors are subject to general requirements specified in the regulations as well as any specific requirement for that sector implemented through the FMP 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 Act.

In accordance with Amendment 13 and subsequent framework adjustments, sectors must submit annually an Operations Plan and Sector Contract to the Regional Administrator (RA) for approval for a sector to be allocated a TAC and authorized to fish. The Operations Plan and Sector Contract must contain certain elements, including a contract signed by all sector participants and a plan containing the management rules that the sector participants agree to abide by to avoid exceeding the allocated TAC. An analysis of the environmental impacts of the sector's proposed operation and harvesting rules is required to comply with the National Environmental Policy Act (NEPA). The present document is an EA of the Hook Sector's proposed operation and harvesting rules in compliance with NEPA.

The cumulative effects of Amendment 13 and the subsequent Frameworks (FW) (FW 40a, 40b, 41, and 42) have resulted in DAS cuts, increased 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; NMFS Northeast Fishery Science Center [NEFSC] 2008), reductions in fishing mortality have occurred for some stocks since 2004 but exploitation on 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 [BRPs]) between GARM II and GARM III can be found in Table 1 of the GARM III report (NMFS NEFSC 2008). It 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. 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. Fishing mortality of GOM haddock increased slightly.

1.3 Intent and Goals of the GB Cod Fixed Gear Sector

The GB Cod Hook Sector is a group of self-selected fishermen that have come together voluntarily and cooperatively for the purposes of efficiently harvesting an annual allocation of GB cod. The Hook Sector currently operates under a hard TAC of GB cod to meet the overfishing mandates of the SFA amendment to the Magnuson Act. Furthermore, one of the Hook 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 Hook Sector may be, found in Section 2.2.

Implementation of the Hook Sector Operations Plan would mitigate potentially adverse economic impacts that have been experienced because of Amendment 13 and FW 42 to the NE Multispecies FMP by conveying environmental, social, and economic benefits directly to the Hook Sector and the community in which it operates. By voluntarily restricting themselves to using hook gear only and operating under a hard TAC, Hook Sector members, employ fishing practices that maintain a low rate of discarded GB cod (See Section 4.2.1 for more details). For example, FY 2007 data yielded GB cod discard rates under 5 percent. Additionally, economic benefits are accruing to the Sector and to the Chatham/Harwichport community because Sector members have been, given the flexibility to make market-based decisions on when and where to fish. Knowing that the sector's TAC was available and could not be achieved by larger vessels and more-efficient gear types, Sector members were given the opportunity to not fish if fish prices were considered too low; whereas in the Common Pool, under Amendment 13 regulations, the drive to achieve the daily trip limit as often as possible did not facilitate such behavior modifications.

1.4 Description of the GB Hook Sector FY 2009 Operations Plan

This EA is an evaluation of the impacts of approving the GB Hook Sector Operations Plan for FY 2009 and allocating a GB cod TAC to the Sector for FY 2009 in comparison to the No Action Alternative. The original Operations Plan for this Sector was submitted in 2004 and was approved and implemented subsequent to the implementation of the Sector by Amendment 13 to the NE Multispecies FMP in 2004. Subsequent Operations Plans have been approved for FY 2005, 2006, 2007, and 2008. The Operations Plan for FY 2009 provides the specific details for how the Hook Sector will function and is required for Hook Sector operations approval.

There are few substantial material changes in the FY 2009 Operations Plan and EA compared to the approved FY 2008 GB Hook Sector Operations Plan and corresponding EA. Only the number of Participating Vessels is expected to change from 19 vessels in FY 2008 to 24 vessels (with 23 active fishing platforms [that is permits attached to vessels that are actively fishing as opposed to permits attached to skiffs for the sole purpose of leasing DAS] in FY 2009).

Chapter 3 contains greater detail on the FY 2009 Operating Area (Section 3.1.2) and requested exemptions (Table 3.1), and Chapter 4 contains previous and expected TAC (Section 4.2.1).

2.0 PURPOSE AND NEED FOR THE APPROVAL OF THE GB COD HOOK SECTOR OPERATIONS PLAN

This chapter describes the need for approval of the Hook Sector fishing year (FY) 2009 Operations Plan and the purpose of the Sector; it also outlines how the Sector's goals support Amendment 13 goals and objectives.

2.1 The Need for Sector Operations Plan Approval

Approval of the Georges Bank (GB) Cod Hook Sector for FY 2009 is needed to provide an opportunity for flexible fisheries management through local decision-making, self-monitoring, and sector management. The purpose of the action is to approve an Operations Plan and an allocation of GB cod for the Hook Sector, through the process specified and authorized as part of Amendment 13 and subsequent framework adjustments. Operation of the Hook Sector not only alleviates social and economic hardships, but also meets biological objectives through management rules by which the Sector participants agree to abide.

If the Operations Plan as proposed for FY 2009 is not approved, the GB cod-dependent hook fishery based in Chatham/Harwichport would likely suffer under the multiple regulation changes that would result from the No Action Alternative of this environmental assessment (EA) (i.e., fishing would occur only under Common Pool regulations; see Section 3.2). Left with fewer days-at-sea (DAS), a high dependence on GB cod, a limit on the number of hooks that can be used in a given day, and mandatory regulatory discards of GB cod over the daily trip limit, this hook fishery would likely experience a negative economic impact. Without approval of the Operations Plan, the positive social and economic impacts that are generated by the Hook Sector and enjoyed both by the members, and by their communities would be lost (see also Section 4.5).

2.2 Purpose of the Sector

The Hook Sector has established a set of goals that are designed to meet many of the goals and objectives set forth by the New England Fishery Management Council (NEFMC) in Amendment 13. The Hook Sector's goals and the relevant Amendment 13 goals and objectives are listed below (excerpted from the Amendment 13 Final Supplemental Environmental Impact Statement [FSEIS] in Section 2.3). The Sector goals support Amendment 13 goals and objectives in a multitude of ways and selected concurrences are outlined in this section.

The Hook Sector's goals of sustaining a viable hook fishery on GB (Goal 1) through utilization of a hard total allowable catch (TAC) (Goal 3) support the Amendment 13 goal of managing the Northeast (NE) multispecies complex at sustainable levels (Goal 1). Sector Goals 1 and 3 also support Objective 1 of Amendment 13, which is to achieve (on a continuing basis) optimum yield (OY) for the United States fishing industry, and Objective 3 of Amendment 13, which is to adopt fishery management measures that constrain fishing mortality to levels that are compliant with the Sustainable Fisheries Act (SFA). The Hook Sector goal of sustaining a viable commercial groundfish fleet in

Chatham/Harwichport, Massachusetts (Goal 2), supports the Amendment 13 Goals 3, 4, and Objective 7 of maintaining a directed fishery for Northeast multispecies, minimizing adverse impacts on fishing communities and shoreside infrastructure, and maintaining a diverse groundfish fishery. Finally, the 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 goals of creating a management system so that fleet capacity will be commensurate with resource status (Goal 2) and promoting stewardship within the fishery (Goal 6).

Hook Sector Goals:

- Goal 1: Sustain a viable hook fishery on GB.
- Goal 2: Sustain a viable commercial groundfish fleet in Chatham/Harwichport, Massachusetts.
- Goal 3: Assure that the hook fleet will contribute to fisheries sustainability through utilization of a hard TAC.
- Goal 4: Create new opportunities for the GB hook fleet, such as opportunities to pursue healthy or rebuilding groundfish stocks instead of GB cod.
- Goal 5: Retain access for small boat fishermen on GB.
- 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 Goals:

- Goal 1: Consistent with the National Standards and other required provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act) and other applicable law, manage the NE 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 NE multispecies.
- Goal 4: Minimize, to the extent practicable, adverse impacts on fishing communities and shoreside infrastructure.
- Goal 6: Promote stewardship within the fishery.

Amendment 13 Objectives:

- Objective 1: Achieve, on a continuing basis, OY 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 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.

3.0 PROPOSED ACTION AND ALTERNATIVES

This chapter of the CCCHFA Hook Sector EA describes possible fishing alternatives, including details of the proposed action (Preferred Alternative) and a No Action Alternative.

3.1 Alternative One: Approval of Georges Bank (GB) Cod Hook Sector Operations Plan for Fishing Year (FY) 2009

Alternative One, the Preferred Alternative, is approval of the GB Cod Hook Sector Operations Plan and receipt of an allocation of GB cod for FY 2009. Hook Sector vessels would be subject to the regulations implemented under the Operations Plan.

For the sixth fishing year, the GB Cod Hook Sector presents its Hook Sector Operations Plan for review and approval by the National Marine Fisheries Service (NMFS). The proposed Preferred Alternative/Operations Plan has been deliberated by the prospective Hook Sector members and represents the culmination of many stakeholder meetings over many years.

A summary of the Hook Sector Operations Plan (Preferred Alternative) is presented in Table 3.1 and further described in the subsections below.

Table 3.1. Summary of the Hook Sector Operations Plan (FY 2009).

Sector Parameters	Description
Location	GB Cod Hook Sector Area
Timeframe	May 1, 2009–April 30, 2010 (but vessels must continue to comply with the Spawning Season Restrictions; see Harvest Rule #10 in Section 3.1.4)
Gear	Hook and line gear, including jigs, handline, and non-automated demersal longlines
Allocated species	Georges Bank cod
Other Landed Species/Bycatch	See Table 4.10
Exemptions requested	<ul style="list-style-type: none"> • Participating Vessel and/or Permits may not transfer or lease Days-at-Sea (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 if such leasing or transferring is authorized by an amendment to the Plan or by the Regional Administrator. (Harvest Rule #6 in Section 3.1.4) • No trip limits of GB cod (Harvest Rule #8) • Exempt from limits on the number of hooks that may be fished (Harvest Rule #9) • Participating Vessels are not required to adhere to the Seasonal Closure on Georges Bank (May 1–May 31)

Table 3.1. Summary of the Hook Sector Operations Plan (FY 2009).

Sector Parameters	Description
	(Harvest Rule #10)
Number of participants	24 vessels, 22 people
Quota	[NMFS: To Be Determined]
Expected catch (including allocated and other landed species)	[NMFS: To Be Determined]

3.1.1 Number of Participants and Gear Used

There are 24 vessels (with 23 active fishing platforms and 22 members; see Exhibit C of the Operations Plan for a list of Participating Vessels and names of Sector members) in the Hook Sector. Gear used within the GB Cod Hook Sector is typical of the traditional hook gear fleet. Vessels range in size from 23 feet to 42 feet (7 to 13m) and 200 to 600 horsepower. Most vessels sail from Chatham or Harwichport and return to port after 12–18 hours at sea.

The larger vessels (30'–42'; 10m–13m) in the fleet utilize traditional hand-baited longline gear known as tub-trawl (or demersal longline) to catch GB cod and haddock (as part of the Closed Area 1 Hook Gear Haddock Special Access Program). Smaller vessels typically use jigging (rod and reel or handline) to harvest GB cod. Some vessels use longline and jig on the same trip. These vessels often switch seasonally to optimize their catch and minimize their expenses.

Vessels participating in the Hook Gear Sector will be legally bound to uphold and abide by the Operations Plan and by the Harvesting Rules presented below (Section 3.1.4).

3.1.2 Location and Timeframe

Sector members would fish within the GB Cod Hook Sector Area. The geographic boundaries of this area are defined as straight lines connecting defined waypoints (except for the east-facing shoreline of the United States [U.S.]) (Figure 3.1, Table 3.2).

For a description of Closed Areas within the operating area, see Section 4.1.5 (and especially Figure 4.4).

The timeframe is FY 2009, from May 1, 2009, to April 30, 2010.

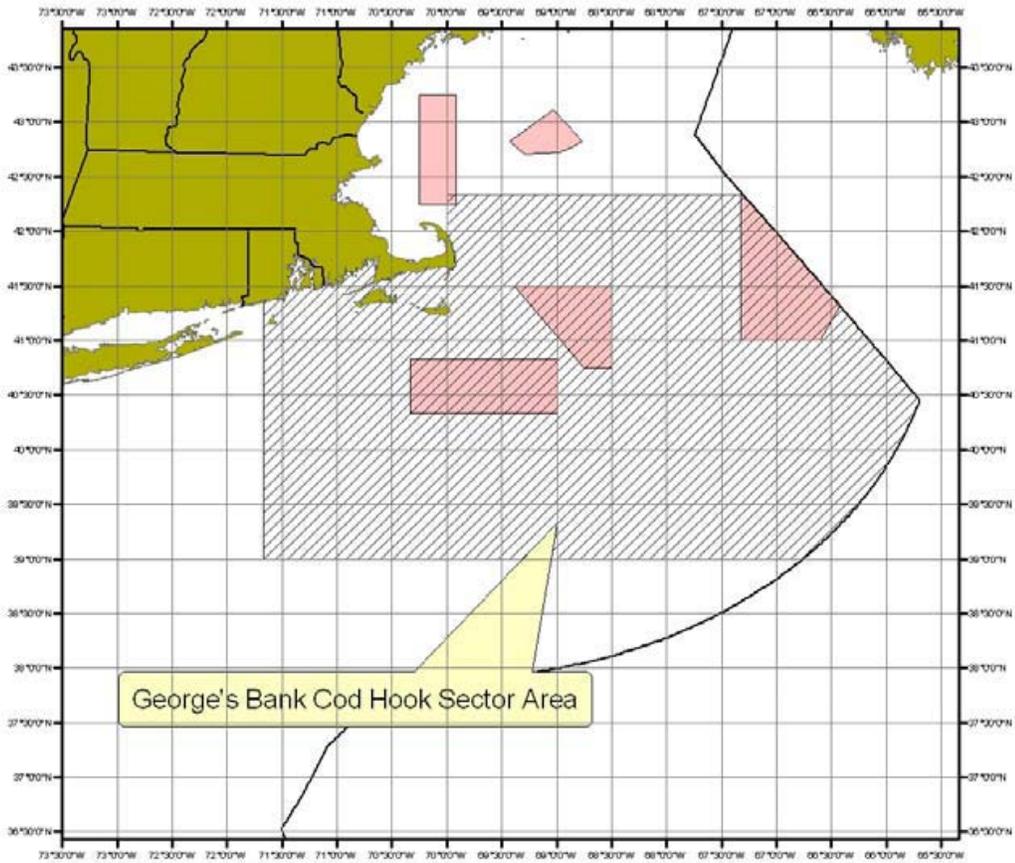


Figure 3.1 Georges Bank Cod Hook Sector Area. NE Multispecies Closed Areas are shaded.

Table 3.2. Georges Bank Cod Hook Sector Area Coordinates.

Point	North Latitude	West Longitude
HS1	East facing shoreline of Cape Cod, Massachusetts	70°00'
HS2	42°20'	70°00'
HS3	42°20'	67°18.4'*
Follow the U.S. Exclusive Economic Zone (EEZ) boundary south to HS4		
HS4	39°00'	66°45.5'
HS5	39°00'	71°40'
HS6	South facing shoreline of Rhode Island	71°40'

*The U.S./Canada Maritime Boundary

3.1.3 Allocated Species and Other Landed Species

The allocated species for the Hook sector is GB cod. Other landed species primarily include haddock, cusk, white hake, and Acadian redfish. For more information on both the allocated and other landed species, see Sections 4.2–4.3.

3.1.4 FY 2009 (May 1, 2009 to April 30, 2010) GB Cod Hook Sector Operations Plan Harvesting Rules

The Members and the Participating Vessels of the Hook Sector agree to be legally bound to follow the Operations Plan and Harvesting Rules for FY 2009 as described herein, notwithstanding those rules and regulations applicable to Common Pool Multispecies vessels.

- 1. Aggregate Sector Allocation:** GB cod total allowable catch (TAC) is [NOAA: To Be Determined]. The members agree that they will not collectively harvest more GB cod than the Sector TAC and that once the annual TAC is reached, no Member will fish commercially with any fishing gear capable of catching GB cod or other species managed under the Plan.
- 2. Monthly Quota Targets:** Commencing May 2009, 8.33 percent of the Sector’s cod quota will be allocated to each month of the fishing year (Table 3.3). Quota that is not landed during a month will be rolled over into the next month. If landings exceed the monthly quota, the excess will be deducted from subsequent monthly quotas to ensure the Sector does not exceed the Aggregate Sector Allocation. All cod harvested by members and Participating Vessels shall be considered GB cod for purposes of the Operations Plan and Agreement.

Table 3.3. Monthly Quota Targets.

	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Percentage	8.3	16.7	25.0	33.3	41.7	50.0	58.3	66.6	75.0	83.3	91.6	100.0

- 3. Weekly Cod Quota Targets:** In addition to the monthly quota targets, 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.
- 4. DAS Allocation:** Each participating Permit and Participating Vessel will be allocated DAS by the Regional Administrator through Amendment 13, as set forth on Exhibit B to the Agreement. This DAS allocation will be considered the Sector’s DAS allocation distributed to individual members. Members will be required to use an “A”, “B Regular,” or “B Reserve” DAS when conducting fishing operations.

5. **Sector Call-in:** Each Participating Vessel must notify the Manager or his designated representative within 24 hours prior to departing from port when using fishing gear capable of catching GB Cod, unless such Vessel is participating in the Sector Skymate Skytracker program, as verified by the Manager.
6. **DAS Transfer/Lease:** 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.
7. **Full Retention of Legal-sized Cod:** All legal-sized cod harvested during any fishing operation must be retained, landed, and counted against the Sector's Aggregate Allocation.
8. **Species Trip Limits:** There will be no species trip limit for Cod during the 2009–2010 fishing year. There will be trip limits for white hake (1,000 lbs per DAS), GB winter flounder (2,000 lbs per trip), and all yellowtail (100 lbs per trip).
9. **Hook Size:** All hooks must be 12/0 circle hooks. For these purposes, 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.
10. **GB Seasonal Closure/Spawning Season Restrictions:** Participating Vessels are not required to adhere to the Seasonal Closure on GB (May 1–May 31). However, Participating Vessels must continue to comply with the Spawning Season Restrictions (a 20-day block March 1 through May 31).
11. **Closed Areas:** Participating Vessels may fish in Closed Areas to the extent authorized by NMFS.
12. **Operating Area:** Participating vessels are restricted to fishing in the designated fishing area when using fishing gear capable of catching GB Cod or any regulated species managed under the Plan. The definition of the management area is the GB Cod Hook Sector Area. The geographic boundaries of the management area are shown in Figure 3.1 and Table 3.2.
13. **Gear Restrictions:** Members and their Participating Vessels may not fish for GB Cod or other species managed under the Plan with gear other than jigs, non-automated demersal longline, or handgear. Participating Vessels are exempt from any hook limits. The Board reserves the right to prohibit other fishing activities by members if it determines that those activities undermine or compromise the Plan and the Sector or otherwise conflict with the standards and ethics described in the bylaws and guiding principles.

- 14. Distribution and Pooling of DAS:** At the beginning of the fishing year, each participating vessel will be allocated DAS identical to the individual baseline established for the vessel by Amendment 13 and subsequently reduced by framework action (FW 42). At any time during the year and subject to Board approval, a member may request the Manager to redistribute DAS among one or more Participating Vessels. The Manager shall notify NMFS within three calendar days of any such request approved by the Board. Vessel size restrictions (10 percent length, 20 percent horsepower) do not apply to the redistribution of DAS among Sector vessels. The maximum vessel characteristics are limited to the largest baseline of a Sector permit. Internal Hook Sector redistribution will cease after March 1 of a given fishing year to provide for administrative action and time to fish the DAS.
- 15. Observer Notification Requirements in the U.S./CA Resource Management Area:** Members are exempt from the requirement to notify the observer program at least 72 hours prior to entering the Western U.S./CA area, only while fishing on an A DAS. Members wishing to fish in the B regular DAS program are still required to notify NMFS 72 hours in advance. All other requirements (e.g., reporting and VMS) are maintained. Members electing to enter the Eastern U.S./CA area are still obligated to comply with the observer notification requirements.
- 16. Additional DAS Management Measures:** Participating vessels are not subject to differential DAS counting requirements implemented through temporary action or Framework 42.
- 17. Prorating of DAS and Landings:** Members and their Participating Vessels that use a DAS (including while engaged in an approved Exempted Fishing Permit [EFP]) prior to the effective date of the Agreement under Article VIII thereof shall have such DAS usage deducted from such members' individual DAS allocation set forth on Exhibit B [of the Hook Sector FY 2009 Operations Plan] hereto, for purposes of the DAS restrictions described in paragraph 3 of this Exhibit C [of the Hook Sector FY 2009 Operations Plan]. All GB codfish caught by said Participating Vessels shall be deducted from the Sector's Aggregate Allocation of GB cod. The Manager and/or other Hook Sector management would consult with NMFS as to NMFS' crediting of all GB cod landings against the Sector's Aggregate Allocation.

In addition to the Operations Plan, Hook Sector members would be subject to a legally binding Membership Agreement that would delineate the interaction of members within the Hook Sector, including governance, monitoring, and assessment of penalties for non-compliance. The Hook Sector would operate independent of Common Pool vessels that will still operate under a soft TAC and input control measures (such as DAS) as the primary controls for managing mortality.

Table 3.4 identifies and compares those elements of the Operations Plan that are specific to the Hook Sector (Preferred Alternative) to those elements of current regulations that would pertain to hook gear vessels in the Common Pool.

Table 3.4. Comparison of Management Measures for Hook Sector Vessels Under the Operations Plan and Common Pool Rules.

Management Measures	Operations Plan (Preferred Alternative)	Common Pool (No Action)
Hard TAC allocation of Georges Bank cod	Yes	No
Monthly quota targets	Yes	No
Weekly quota targets	Yes	No
DAS allocations	Yes	Yes
Sector call-in	Yes	No
DAS transfer to/from Common Pool	No	Yes
Full retention of Georges Bank cod	Yes	No
Species trip limits (Georges Bank cod)	No	1,000 lbs/day
Species trip limits (other species)	Yes	Yes
Hook limit (size)	Size 12/0 circle	Size 12/0 circle
GB Seasonal Closure (May 1–May 31)	No	Yes
Closed Areas	Yes	Yes
Limited to Hook Sector Area	Yes	No
Gear Restrictions (gear)	Hook Only	Fixed gear and mobile gear
Gear Restrictions (hook limit)	No	Yes
Distribution and pooling of DAS within Hook Sector	Yes	No
Observer Notification	Western U.S./CA = no	Yes
Differential DAS counting	No	Yes
Prorating of DAS and Landings	Yes	Yes

3.2 Alternative Two: No Action Alternative

Alternative Two, the No Action Alternative, is the disapproval of the Hook Sector Operations Plan and no submission of a modified Operations Plan. While the Hook Sector would be available under the No Action Alternative, all vessels would remain in the Common Pool and fish under the regulations implemented in Amendment 13 and subsequent framework adjustments to the NE Multispecies FMP. Therefore, no allocation of GB cod would be made to the Hook Sector.

The No Action Alternative assumes the disapproval of the Operations Plan and no submission of a modified Operations Plan. Under this alternative, all Hook Sector vessels would remain in the Common Pool under the rules implemented in Amendment 13 and subsequent FW adjustments to the FMP. The Hook Sector would not have an allocation of GB cod. The No Action Alternative would subject all GB Hook 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.

3.3 Alternatives Considered but Rejected from Further Analysis

As this Sector is now in its sixth year, no other alternatives have been considered.

4.0 AFFECTED ENVIRONMENT

The Valued Ecosystem Components (VECs) affected by the proposed alternative (henceforth, “action”), including the physical environment, Essential Fish Habitat (EFH), allocated species and other landed species, bycatch, protected species, and human communities are described below. Groundfish stock analysis reflects the latest information from the 2008 Report of the Third Groundfish Assessment Review Meeting (GARM III) (NMFS NEFSC 2008).

4.1 Physical Environment, Habitat, and EFH

The Hook Sector will continue to operate in the geographic area known as the Georges Bank (GB) Cod Hook Sector area as defined in Table 3.2 and shown in Figure 3.1.

4.1.1 Physical Environment

The Northeast (NE) Shelf Ecosystem includes the area from the Gulf of Maine (GOM) south to North Carolina, extending from the coast seaward to the steep submarine canyons at the edge of the continental shelf break, 62 to 124 miles (100 to 200 km) offshore (Sherman et al. 1996). Geomorphological features of note include shoal massifs, scarps, sand ridges, swales, and shelf valleys and channels. Only the GB portion of the NE Shelf Ecosystem is relevant to the proposed action (Figure 4.1).

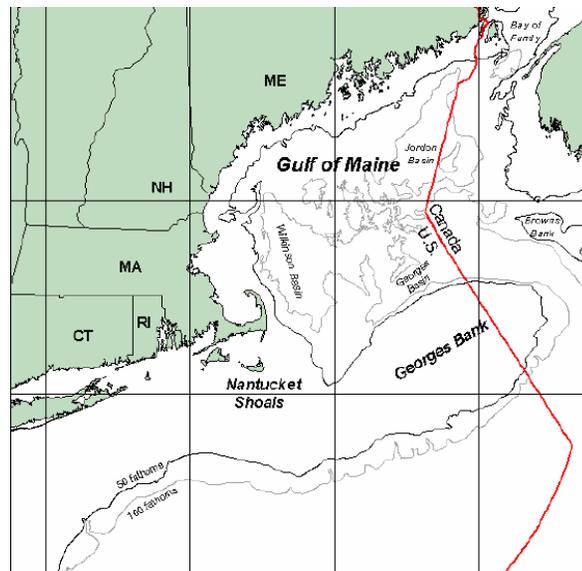


Figure 4.1. The New England Region, Including Gulf of Maine, Georges Bank, and Nantucket Shoals (NEFMC 1998; NEFMC Amendment 13 FSEIS, Section 9.1.2).

Georges Bank is a distinctive extension of the continental shelf, relatively shallow (10 to 500' [3–150m] deep) and elongate (100 × 200 miles [161 × 322 km] long), with a steep northern edge and gently sloping southern flank.

4.1.2 Georges Bank Habitat

Habitats provide living things with the basic life requirements of nourishment and shelter, ultimately providing for both individual and population growth. The GB, like all fishery habitats, is influenced by the quantity and quality of available habitat. Current speed and direction, availability and type of sediment, bottom topography, depth, temperature, and nutrient supply are important parameters, which determine the type and level of resource population that the habitat supports.

The strong erosive currents (2.5–4 miles per hour [4–7 km/hr]) on and around GB seabed sediments (clay to gravel) reshape the seabed, creating shoals and troughs, and bring a rich bio-productivity. The varied currents keep the waters over the bank well-mixed vertically and result in a clockwise gyre that controls the drift of larval fish and other plankton. The oceanographic conditions on GB influence the distribution and survival rates of cod larvae and affect forage species upon which cod rely.

Sedimentary composition of the ocean floor is highly variable in GB (as it is in GOM and southern New England), differing in origin, texture, size, transport mechanism, and distribution, and includes smooth sand or mud, sand waves, shell aggregates, pebbles and cobbles with or without attached megafauna, partially buried boulders, and piled boulders. The distribution of these sediment types is shown in Figure 4.2.

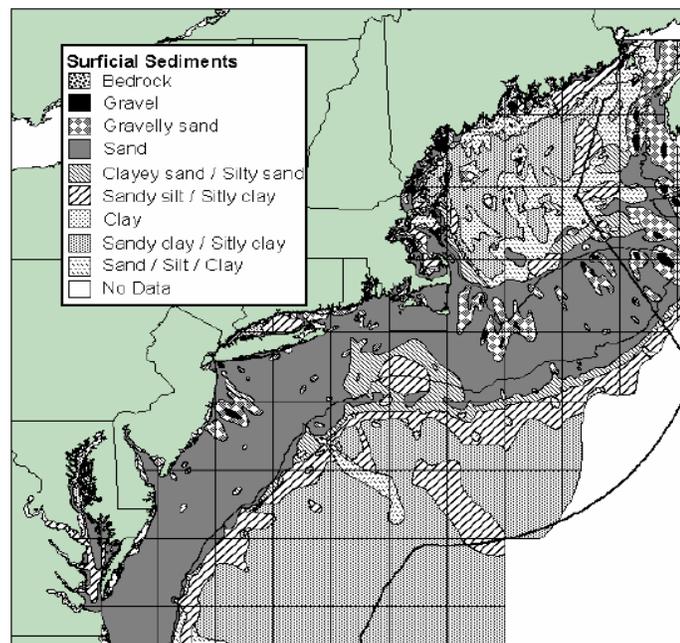


Figure 4.2. Map Showing Distribution of Surficial Sediments in Gulf of Maine, Georges Bank, and Southern New England (NEFMC 1998).

Bottom topography, including features such as submarine canyons, rock ledges, and topographic peaks, may contribute to suitable environmental conditions for the

survivorship, growth, and reproduction of benthic, demersal, and pelagic organisms (NEFMC 1998). Emergent epifauna also contribute to the survivorship of marine organisms because of the increased cover and habitat complexity they provide (NEFMC 1998).

The interactions of these environmental factors form seven microhabitat types on GB (Valentine and Lough 1991; Stevenson et al. 2004) that are described in Table 4.1.

Table 4.1. Description of Fishery Habitat Value of Different Benthic Sedimentary Terms (NEFMC 1998).

Microhabitat Types	Description of Fishery Habitat Value
Smooth sand or mud	Areas with no vertical structure; they provide predation refuge, protection against currents, and burrowing habitat for an array of invertebrates
Sand waves	Troughs and peaks provide shelter from currents; previous observations indicate species such as whiting position themselves on the down-current sides of sand waves where they ambush drifting demersal zooplankton and shrimp
Biogenic structures	Burrows, depressions, cerianthid anemones, hydroid patches; features that are created and/or used by mobile fauna for shelter
Shell aggregates	Provide complex small interstitial spaces for shelter; shell aggregates also provide a complex high contrast background which may confuse visual predators
Pebbles and cobbles	Provide small interstitial spaces and may be equivalent in shelter value to shell aggregates
Pebbles and cobbles with attached megafauna	Attached fauna such as sponges provide additional spatial complexity for a wider range of size classes of mobile organisms
Partially buried boulders	While not providing small interstitial spaces or deeper crevices, partly buried boulders exhibit high vertical relief; the shelter value of this type of habitat may be less or greater than previous types based on the size class and behavior species
Piled boulders	This habitat provides deep interstitial spaces of variable sizes

GB has been historically characterized by high levels of both primary productivity and fish production. The most common groups of benthic invertebrates in GB, 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) summarized in Table 4.2.

Table 4.2. Macrobenthic Invertebrate Assemblages Found in Georges Bank (after Theroux and Grosslein 1987).

Assemblage	Depth	Current Speed	Bottom Sediments	Fauna
Western Basin	Relatively deep (500–650'; 150–200m)	Relatively slow currents	Bottom sediments of silt, clay and muddy sand	Mainly small burrowing detritivores and deposit feeders, and carnivorous scavengers
Northeast Peak	Variable depth	Variable current strength	Coarse sediments, mainly gravel and coarse sand, with interspersed boulders, cobbles, and pebbles	Sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms
Central Georges Bank	<325' (<100m)	Strong currents	Medium grained, shifting sands predominate	Organisms tend to be small to moderately large with burrowing or motile habits
Southern Georges Bank	260–650' (80–200m)	Moderate currents	Fine grained sands	Many southern species at the northern limits of their range

Two studies (Gabriel 1992, Overholtz and Tyler 1985) reported common demersal fish species by assemblages in GB and in GOM shown in Table 4.3.

Table 4.3. Common Demersal Species in Georges Bank.¹ GB = Georges Bank; GOM = Gulf of Maine; SNE = Southern New England.

Assemblage	Demersal Fish Species
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
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
Northeast Peak/ Gulf of Maine-Georges Bank transition	Atlantic cod, haddock, pollock

¹ Other species were listed as found in these assemblages, but only the species common to both studies are listed.

4.1.3 EFH Present in Proposed Action Area

The 1996 Sustainable Fisheries Act (SFA) Amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act) define EFH as "... those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The intent of EFH, as identified by the SFA amendments, is to regulate fishing gear that reduces the capacity of EFH to support marine resources, not practices that produce inconsequential changes in the habitat. The EFH Final Rule also identifies adverse impacts as:

...any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction of species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Effects resulting from fishing activities may include physical, chemical, or biological alterations of the substrate, and loss of, or injury to, benthic organisms, prey species and their habitat, and other components of the ecosystem. Furthermore, the EFH final rule requires the identification and implementation of management actions where adverse effects are, identified.

The EFH for cod is described as those areas of the coastal and offshore waters (extending to the offshore United States boundary of the Exclusive Economic Zone [EEZ]) that are designated on Figure 4.3 and meet the conditions listed in Table 4.4. A complete guide to EFH descriptions for Atlantic cod and the multispecies fishery is included in the NEFMC Essential Fish Habitat Amendment (NEFMC 1998).

Table 4.5 briefly summarizes the habitat requirements for each of the 12 groundfish species managed by the Northeast Multispecies (large mesh) Fishery Management Plan (FMP). Information for this table was extracted from the original FMP and profiles available from National Oceanic & Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) (Clark 1998), and essential fish habitat information for egg, juvenile and adult life stages for these species was compiled in Tables 6.2–6.45 in Stevenson et al. (2004). 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' egg stages occupy habitats that are not subject to interaction with gear (i.e., are pelagic) and are not listed below. A complete guide to EFH descriptions for the managed species in the NE Region, the type of habitats utilized by the managed species at each life-stage, and the geographical extent of the EFH can be found at the NMFS NE Regional Office (NERO) Habitat Conservation Division (<http://www.nero.noaa.gov/hcd/list.htm>).

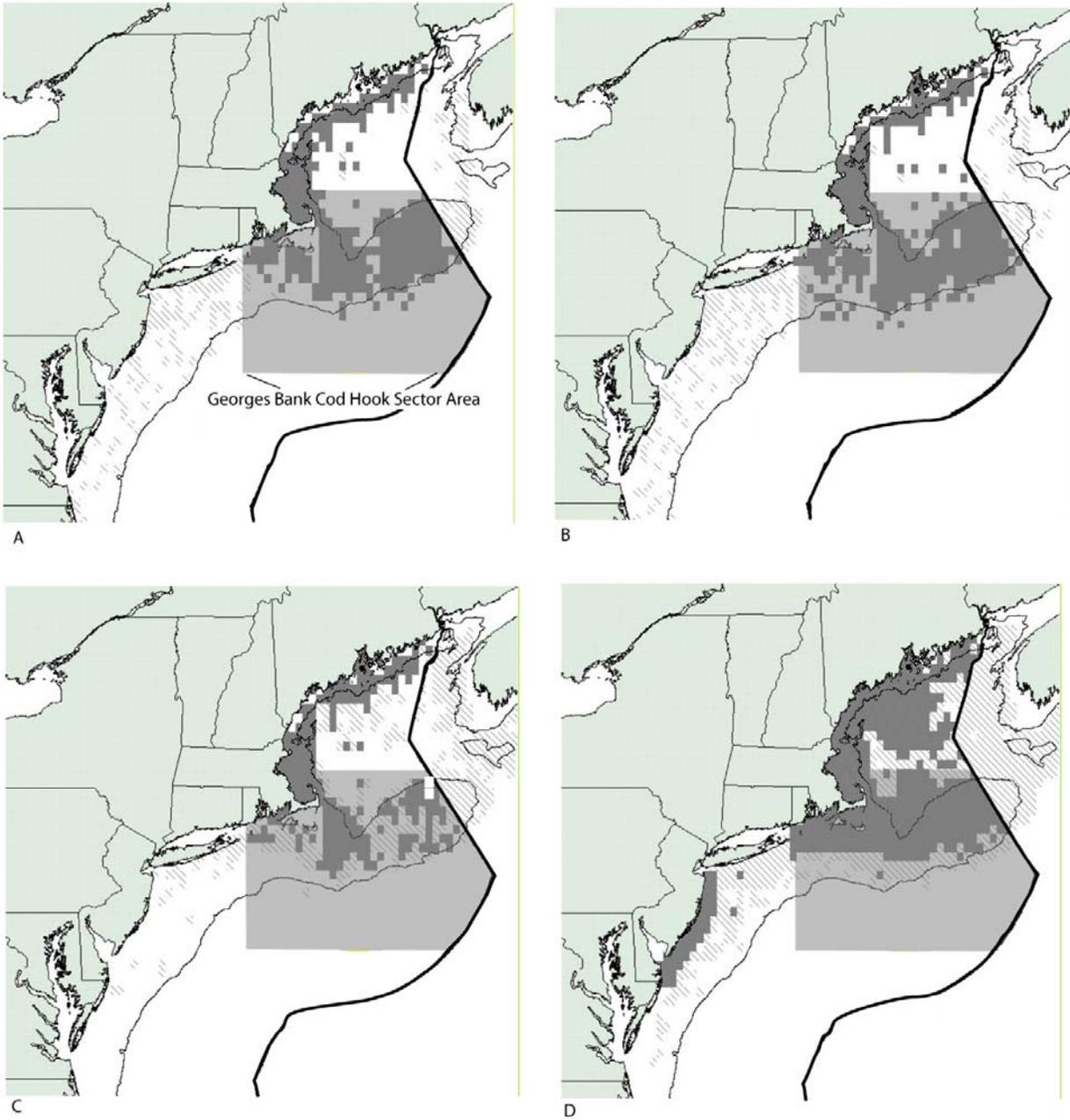


Figure 4.3. Essential Fish Habitat Designation for Atlantic Cod (A) Eggs, (B) Larvae, (C) Juveniles, and (D) Adults. In each map, dark gray areas represent the EFH designation while cross hatching represents the entire observed range. In (C) the small area highlighted on the northern edge of the Georges Bank Hook Sector Area represents the “habitat area of particular concern” (HAPC) designation for juvenile Atlantic cod (NEFMC 1998: 47–50).

Table 4.4. Conditions for EFH Designation for GB Cod (NMFS Northeast Regional Office, Habitat Conservation Division 1998:45–50). See also Figure 4.3.

Stage	Location	Sea Surface Temperatures	Depths	Salinity	Season
Eggs	Surface waters around the perimeter of the Gulf of Maine, Georges Bank, and the eastern portion of the continental shelf off southern New England	< 55°F (12°C)	water depths <360' (110m)	32–33‰	Beginning in the fall with peaks in the winter and spring
Larvae	Pelagic waters of the Gulf of Maine, Georges Bank, and the eastern portion of the continental shelf off southern New England	< 50°F (10°C)	100–230' (30–70m)	32–33‰	Most often observed in the spring
Juveniles	Bottom habitats with a substrate of cobble or gravel in Gulf of Maine, Georges Bank, and the eastern portion of the continental shelf off southern New England	< 68°F (20°C)	80-250' (25–75m)	30–35‰	Year round
Adults	Bottom habitats with a substrate of rocks, pebbles, or gravel in the Gulf of Maine, Georges Bank, southern New England, and the Mid-Atlantic south to Delaware Bay	< 50°F (10°C)	30-500' (10–150m)	Wide range	Year round
Spawning adults	Bottom habitats with a substrate of smooth sand, rocks, pebbles, or gravel in the Gulf of Maine, Georges Bank, southern New England, and the Mid-Atlantic south to Delaware Bay	< 50°F (10°C)	30-500' (10–150m)	Wide range	Most often observed spawning during fall, winter, and early spring

Table 4.5. Summary of Groundfish Preferred Habitat and Primary Commercial Gear Used to Catch Each Species (NEFMC 1998). Species life stages are indicated by letter in parentheses: E = egg; J = juvenile; A = adult. Note: these 12 groundfish species are managed by the NE Multispecies (large mesh) FMP.

Species	Geographic Region of Northeast*	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
Atlantic cod	GOM, GB and southward	Omnivorous (invertebrates and fish)	(J): 82–245' (25–75 m) (A): 33–492' (10–150 m)	(J): Cobble or gravel bottom substrates (A): Rocks, pebbles, or gravel bottom substrate	Otter trawl, longlines, gillnets
Haddock	southwestern GOM and shallow waters of GB	Benthic feeders (amphipods, polychaetes, echinoderms)	(J): 115–328' (35–100 m) (A): 131–492' (40–150 m)	(J): Pebble and gravel bottom substrates (A): Broken ground, pebbles, smooth hard sand, smooth areas between rocky patches	Otter trawl, longlines, gillnets
Acadian redfish	GOM, deep areas of GB and Great South Channel	Crustaceans	(J): 0–820' (25–400 m) (A): 164–1148' (50–350 m)	(J): Bottom habitats with a substrate of silt, mud, or hard bottom (A): Same as for (J)	Otter trawl
Pollock	Western Scotian Shelf, GOM	Juvenile feed on crustaceans, adults primarily feed on fish	(J): 0–820' (0–400 m) (A): 49–1198' (15–365 m)	(J): Bottom habitats with aquatic vegetation; substrate of sand, mud, or rocks (A): Hard bottom habitats including artificial reefs	Otter trawl, gillnets
Ocean pout	GOM, Cape Cod Bay, GB, Southern New England	Juveniles feed on amphipods and polychaetes. Adults feed on mollusks, crustaceans, and echinoderms.	(E): <164' (<50 m) (J): <262' (<80 m) (A): <361' (<110 m)	(E): Bottom habitats, generally hardbottom sheltered nests, holes, or crevices where they are guarded by parent (J): Bottom habitat, often smooth areas near rocks or algae (A): Bottom habitats; dig depressions in soft sediments	Otter trawl
Atlantic Halibut	GOM, GB	Juveniles feed on annelid worms and crustaceans, adults mostly feed on fish	(J): 66–197' (20–60 m) (A): 328–2,297' (100–700 m)	(J): Bottom habitat with a substrate of sand, gravel, or clay (A): Same as for (J)	Otter trawl, longlines
White hake	GOM, GB, Southern New England	Decapod shrimp, euphausiids, fish	(J): 16–738' (5–225 m) (A): 16–1066' (5–325 m)	(J): Bottom habitat with seagrass beds, substrate of mud or fine-grained sand (A): Bottom habitats with substrate of mud or fine-grained sand	Otter trawl, gillnets
Yellowtail flounder	Southern New England, GB	Amphipods and polychaetes	(J): 66–164' (20–50 m) (A): 66–164' (20–50 m)	(J): Bottom habitats with substrate of sand or sand and mud (A): Same as for (J)	Otter trawl
American plaice	GOM, GB	Polychaetes, crustaceans, mollusks, echinoderms	(J): 148–492' (45–150 m) (A): 148–574' (45–175 m)	(J): Bottom habitats with fine grained sediments or a substrate of sand or gravel (A): Same as for (J)	Otter trawl
Witch flounder	GOM, GB, Mid-Atlantic Bight/Southern New England	Polychaetes (worms), echinoderms	(J): 164–1476' (50–450 m) (A): 82–984' (25–300 m)	(J): Bottom habitats with fine grained substrate (A): Same as for (J)	Otter trawl

Table 4.5. Summary of Groundfish Preferred Habitat and Primary Commercial Gear Used to Catch Each Species (NEFMC 1998). Species life stages are indicated by letter in parentheses: E = egg; J = juvenile; A = adult. Note: these 12 groundfish species are managed by the NE Multispecies (large mesh) FMP.

Species	Geographic Region of Northeast*	Food Source	Essential Fish Habitat		Commercial Fishing Gear Used
			Water Depth	Substrate	
Winter flounder	GOM, GB, Mid-Atlantic Bight/Southern New England	Polychaetes, plant material	(E): <16' (5 m) (J): 0.1–10 m (0.3–32') (age 1+ 3.2–164'; 1–50 m) (A): 3.2–328' (1–100 m)	(E): Bottom habitats with a substrate of sand, muddy sand, mud, and gravel (J): Same as for (E) (A): Same as for (E)	Otter trawl, gillnets
Windowpane flounder	GOM, GB, mid-Atlantic Bight/Southern New England	Crustaceans (primarily mysids)	(J): 3.2–328' (1–100 m) (A): 3.2–245' (1–75 m)	(J): Bottom habitats with substrate of mud or fine grained sand (A): Same as for (J)	Otter trawl

^o
GOM = Gulf of Maine; GB = Georges Bank.

4.1.4 Proposed Gear

The Hook Sector will fish for GB cod jigs, non-automated demersal longline or handgear. 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. Circle hooks are designed to be less damaging to habitat features than other hook shapes (NOAA 2001). Participating Vessels are exempt from limits on the number of hooks that may be fished. While participating in the GB Seasonal Closure (May 1–May 31), vessels must use hook gear to catch cod or other regulated species managed under the Plan.

Bottom long-lines typically have up to six individual “bundles” strung together for a total length of more than 1,500 feet (450m) and are deployed with 20–24 lb (9–11 kg) anchors. The mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches (40 cm) long and 3–6 feet (1–1.8 m) apart and are made of shrimp twine. The mainline, hooks, and gangions all contact the bottom. These long-lines are usually set for only a few hours at a time (known as “soak time”) (Northeast Region Essential Fish Habitat Steering Committee 2002).

4.1.5 Closed Areas within the GB Cod Hook Sector Area

The Magnuson Act requires all FMPs to identify actions to promote the conservation and management of fishery resources. The regulatory text of the Amendment 13 Final Rule directs the Council to describe options to avoid, minimize, or compensate for the adverse effects of activities identified in the nonfishing threats section (NEFMC 1998: Section 5) of this amendment. The Amendment 13 Final Rule also directs the Council to promote the conservation and enhancement of EFH, especially in habitat areas of particular concern (HAPCs).

Areas closed to some level of fishing and non-fishing activities (Closed Areas) essentially constitute a Marine Protected Area (MPA) that the Council may continue to use to protect EFH for the sustainability of fishery resources. This approach to protecting fishery resources has been implemented on GB with the designation of Closed Areas as shown in Figure 4.4 (NEFMP 1998). The designation of long-term Closed Areas has resulted in the removal or reduction of fishing effort from important fishing grounds. Closed Areas may also serve as conservation and enhancement measures for the protection of EFH.

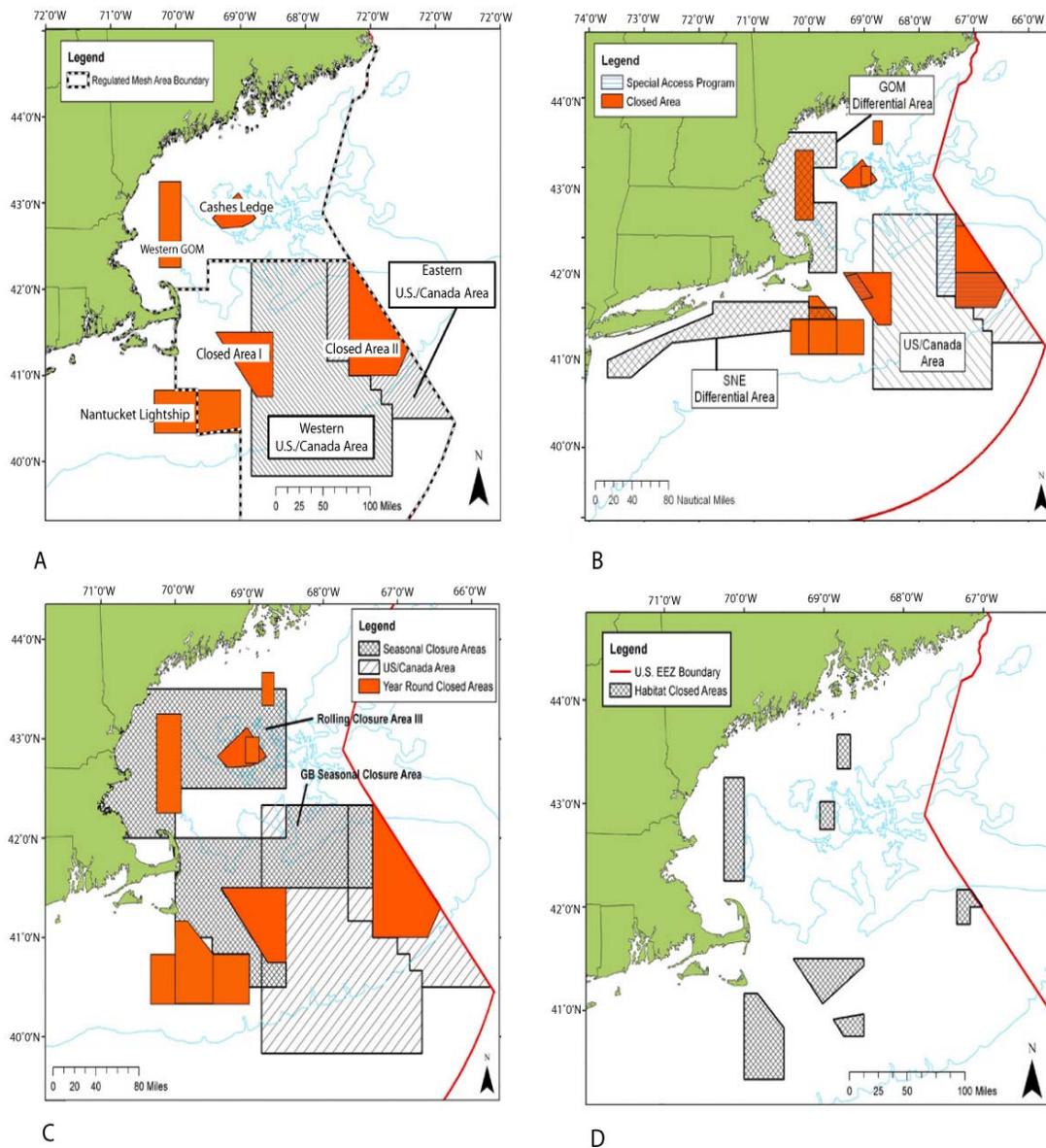


Figure 4.4. A) Northeast Multispecies Closed Areas and United States/Canada Management Area. B) Northeast Multispecies differential Days-at-Sea Areas, Closed Areas, Special Access Programs, and the United States/Canada Management Area. C) NE Multispecies May Seasonal Closures overlaid on NE Multispecies Closed Areas and the U.S./CA area. D) Essential Fish Habitat Closure Areas.

4.2 Allocated Species/Other Landed Species

This section discusses both the allocated species for which the Sector TAC is prescribed, as well as any other species landed while fishing for the allocated species.

Allocated Species: The allocated species for the Hook Sector is GB cod (Figure 4.5), one of two distinct management units of Atlantic cod (*Gadus morhua*). The species can be found in the northwest Atlantic Ocean from Greenland to Cape Hatteras, North Carolina, but their densities are greatest in the western GOM. Atlantic cod occupy depths between nearshore areas and 1,300' (400m) (rare) but are most often concentrated on rough bottoms 32–500' (10–150m) deep and at temperatures of 32–50°F (0–10°C).

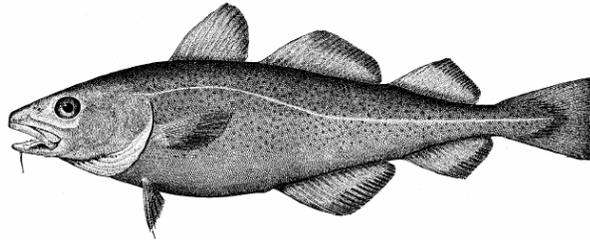


Figure 4.5 The Atlantic Cod (*Gadus morhua*) (Goode 1884)

After 1 year, cod average 10 inches (26 cm) in length and can eventually grow to 50 inches (130 cm) in length and weights of 55–75 lbs (25–35 kg). Median age at sexual maturity is 1.7–2.3 years at lengths between 13 and 16 inches (32 and 41 cm) (NEFSC 2005). Most cod are of legal catch size between the ages of 2 and 5 years. Large females may produce 3–9 million eggs, indicating high fecundity. Spawning occurs near bottom during winter and early spring, usually in water temperatures between 40 and 45°F (5 and 7°C). Eggs drift for 2–3 weeks in the water column before hatching; larvae remain in the water column until they reach 1.5–2.5 inches (4–6 cm) in about 3 months then, descend to the bottom (Lough 2004).

The Atlantic cod population is split into two distinct management units under the NE Multispecies FMP: GOM cod and GB cod. Little interchange occurs between the two (Lough 2004). As such, no changes are proposed in the management regime for GOM cod nor would this stock be accessible to participants in the proposed action: the allocated species is GB cod. All cod harvested by the Hook Sector will be considered GB cod.

Other Landed Species: While Sector members fish for GB cod, other fish are caught by the gear intended for cod. These other species are either discarded as bycatch, or they are brought to shore and sold to dealers, assuming the fisher has proper authorization or permit(s). These other landed species may be groundfish regulated by the Multispecies (large mesh) FMP (e.g., haddock, pollock, redfish, etc. in Table 4.5), or they may be managed under another FMP (e.g., monkfish, dogfish, and skates). Other than cod, the primary species that are landed by this Sector are haddock, cusk, pollock, and skate wings. Of these haddock and pollock are included in the NE Multispecies FMP were both included in the GARM III report; haddock is listed as not overfished or being overfished, while pollock is overfished and being overfished. Skates are managed under the Northeast Skate Complex Fishery Management Plan (NEFMC 2007) and the Northeast skate complex is considered to be at a medium abundance level. Cusk biomass levels declined from 2002-2005, but the species is not under a management plan (NEFSC 2006).

4.2.1 Interaction between Gear and Allocated Species

The Hook Sector's TAC of GB cod, total amount landed, percentage of TAC landed, and numbers of Participating Vessels for FY 2004 through 2008 are listed in Table 4.6. Tables 4.7 and 4.8 summarize the landings and discards of GB cod for the Hook Sector during FY 2004–2007 and FY 2008 (May–September 2008), respectively. Hook Sector membership has declined for a number of reasons, including lack of GB cod; an overabundance of spiny dogfish sharks (which out compete cod for the Sector members' baits); and a transfer of membership to the Fixed Gear Sector, where the opportunity to use more efficient gillnets exists. In FY 2009 it is expected that Hook Sector membership may increase from the FY 2008 levels, as members that had transferred to the Fixed Gear Sector rejoin the Hook Sector.

Table 4.6. Total allocated catch and landing data for the Georges Bank Hook Sector Fishing Years 2004-2008.

Fishing Year	TAC of Georges Bank Cod, Pounds (mt)	Total Amount Landed, Pounds (mt)	Percentage of TAC Landed	Number of Participating Vessels
2004	817,914 (371)	286,190 (130)	34.9	58
2005	1,003,103 (455)	279,188 (127)	27.8	48
2006	1,355,842 (615)	229,518 (104)	16.9	36
2007	1,488,120 (675)	188,525 (86)	12.7	25
2008	1,450,566 (658)	58,979 (27)	13.5	19

Table 4.7. FY 2004- GB Cod Monthly Quota Report for the Hook Sector. Due to changing reporting requirements, discard data were not collected for FY 2004 and FY 2005.

Month/Year	Reported Landed Cod, Pounds (Hail Weight)	Hail Weight Converted Cod, Pounds (Round Weight)	Reported Discarded Cod, Pounds (Round Weight)	Total Reported Catch, Pounds (Round Weight)	Combined Annual Catch Reported, Pounds (Round Weight)	Combined Annual Catch Reported (% of quota)
May 2004	0 ¹	-	-	-	-	-
June 2004	0 ¹	-	-	-	-	-
July 2004	38,722	-	-	-	-	-
August 2004	39,670	-	-	-	-	-
September 2004	68,286	-	-	-	-	-
October 2004	50,076	-	-	-	-	-
November 2004	28,786	-	-	-	-	-
December 2004	28,895	-	-	-	-	-
January 2005	22,280	-	-	-	-	-
February 2005	3,943	-	-	-	-	-
March 2005	384	-	-	-	-	-
April 2005	5,148	-	-	-	-	-
FY 2004 Total	286,190	-	-	-	-	-
May 2005	42,052	-	-	-	-	-
June 2005	34,870	-	-	-	-	-

Table 4.7. FY 2004- GB Cod Monthly Quota Report for the Hook Sector. Due to changing reporting requirements, discard data were not collected for FY 2004 and FY 2005.

Month/Year	Reported Landed Cod, Pounds (Hail Weight)	Hail Weight Converted Cod, Pounds (Round Weight)	Reported Discarded Cod, Pounds (Round Weight)	Total Reported Catch, Pounds (Round Weight)	Combined Annual Catch Reported, Pounds (Round Weight)	Combined Annual Catch Reported (% of quota)
July 2005	15,846	-	-	-	-	-
August 2005	24,281	-	-	-	-	-
September 2005	55,201	-	-	-	-	-
October 2005	12,748	-	-	-	-	-
November 2005	36,305	-	-	-	-	-
December 2005	16,117	-	-	-	-	-
January 2006	21,327	-	-	-	-	-
February 2006	4,371	-	-	-	-	-
March 2006	1,000	-	-	-	-	-
April 2006	15,070	-	-	-	-	-
FY 2005 Total	279,188	-	-	-	-	-
May 2006	22,662	26,515	1,000	27,514	27,515	2.03
June 2006	21,020	24,593	3,683	28,276	55,791	4.11
July 2006	9,819	11,488	988	12,476	68,267	5.04
August 2006	16,382	19,167	996	21,272	89,539	6.60
September 2006	30,113	35,232	2,105	36,809	126,348	9.32
October 2006	16,535	19,346	1,577	21,179	147,527	10.88
November 2006	13,925	16,292	1,833	16,883	164,410	12.13
December 2006	12,436	14,550	591	15,074	179,485	13.24
January 2007	14,646	17,136	524	17,291	196,777	14.51
February 2007	2,901	3,394	156	5,624	202,401	14.93
March 2007	5,170	6,049	2,230	7,884	210,285	15.51
April 2007	16,439	19,234	1,835	19,234	229,518	16.93
FY 2006 Total	182,048	212,996	17,518	229,518	-	-
May 2007	76,073	89,004	3,841	92,845	92,845	6.2
June 2007	17,844	20,878	1,120	21,998	114,843	7.7
July 2007	3,444	4,029	550	4,579	119,421	8.0
August 2007	2,876	3,365	90	3,455	122,876	8.3
September 2007	2,921	3,418	145	3,563	126,439	8.5
October 2007	6,167	7,230	136	7,366	133,805	9.0
November 2007	5,844	6,837	119	6,956	140,762	9.5
December 2007	12,814	1,449	355	14,804	155,566	10.5
January 2008	13,987	16,077	920	16,997	172,563	11.6
February 2008	0	0	2	2	172,565	11.6
March 2008	107	125	0	125	172,690	11.6
April 2008	13,376	15,650	185	15,835	188,525	12.7
FY 2007 Total	155,453	181,062	7,463	188,525	-	-

*No landings occurred in May or June 2004 because the Hook Sector implementation was delayed until July 2004.

Table 4.8. Preliminary (through September 30, 2008) FY 2008 Georges Bank Cod Monthly Quota Report for the Hook Sector.

Month/Year	Reported Landed Cod, in Pounds (Hail Weight)	Hail Weight Converted Cod, in Pounds (Round Weight)	Reported Discarded Cod, in Pounds (Round Weight)	Total Reported Catch, in Pounds (Round Weight)	Combined Annual Catch Reported Pounds (Round Weight)	Combined Annual Catch Reported % of quota
May 2008	23,642	27,661	577	28,238	28,238	1.9
June 2008	16,992	19,881	3,298	23,179	51,417	5.4
July 2008	5,915	6,921	319	7,240	58,656	9.4
August 2008	276	323	0	323	58,979	13.5
September 2008	0	0	0	0	58,979	13.5
FY 2008 Total	46,825	54,786	4,194	58,980	58,979	13.5

4.3 Bycatch

As defined in the Magnuson 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.” Table 4.10 provides a list of species caught during the years of Hook Sector operations. According to the definition of bycatch above, the columns labeled “discharge” indicated historical bycatch. The species primarily discarded include haddock, spiny dogfish, and cusk. Of these, haddock (included in the GARM III assessment) is listed as not overfished and not overfishing. Below is a discussion of stock status for each of the groundfish regulated under the Multispecies (large-mesh) FMP.

Of the 19 groundfish stocks (including both species and management units) included in the GARM III report, benchmark assessments indicated that six stocks were fished below a level called the fishing mortality rate that would produce maximum sustainable yield (F_{MSY}) (or its proxy) in 2007 and 13 above (Table 4.9). 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 New England Fishery Management Council (NEFMC) Web site at <http://www.nefmc.org>.

Table 4.9. Comparison of Status of the Northeast Groundfish Stocks in 2004 (GARM II) and 2007(GARM III). GARM II Used Catch Data Through 2004, and Did Not Assess Halibut; GARM III Used Catch Data Through 2007.

Stock Status	Stock Status 2004 (GARM II)³	Stock Status 2007 (GARM III)
Overfished and Overfishing Biomass < ½ B _{MSY} ¹ and F > F _{MSY} ²	GB Cod GB Yellowtail SNE/MA Yellowtail GOM/CC Yellowtail SNE/MA Winter Flounder White Hake GOM Cod	GB Cod GB Yellowtail SNE/MA Yellowtail GOM/CC Yellowtail SNE/MA Winter Flounder White Hake Pollock Witch Flounder GB Winter Flounder GOM Winter Flounder Northern Windowpane
Overfished but not Overfishing Biomass < ½ B _{MSY} and F < F _{MSY}	GB Haddock GOM Haddock Southern Windowpane Plaice Ocean Pout	Ocean Pout Halibut
Not Overfished but Overfishing Biomass > ½ B _{MSY} and F > F _{MSY}	GB Winter Flounder	GOM Cod Southern Windowpane
Not Overfished and not Overfishing Biomass > ½ B _{MSY} and F < F _{MSY}	Pollock Redfish Northern Windowpane GOM Winter Flounder Witch Flounder	Redfish Plaice GB Haddock GOM Haddock

¹ B_{MSY} = biomass necessary to produce maximum sustainable yield

² F_{MSY} = fishing mortality rate (F) that produces the maximum sustainable yield.

³ GB = Georges Bank; GOM = Gulf of Maine; SNE = Southern New England; MA = mid-Atlantic.

Landings and discards of all species for FY 2004-2007 and FY 2008 (through September 30, 2008) are found in Table 4.10.

Table 4.10. Hook Sector Historical Landings and Discards for All Species, Ranked by FY 2004 Dealer Landings. FY 2008 Data are through October 1, 2008. Due to changing reporting requirements, discard data was not collected for FY 2004 and FY 2005.

Species	FY 2004 Dealer Landings (pounds)	FY 2004 Reported Discards (pounds)	FY 2005 Dealer Landings (pounds)	FY 2005 Reported Discards (pounds)	FY 2006 Dealer Landings (pounds)	FY 2006 Reported Discards (pounds)	FY 2007 Dealer Landings (pounds)	FY 2007 Reported Discards (pounds)	FY 2008 Dealer Landings (pounds)	FY 2008 Reported Discards (pounds)
Haddock	1,524,706	-	1,114,401	-	258,544	29,650	299,126	20,515	159,217	7265
Atlantic cod	286,190	-	275,743	-	179,616	17,518	155,453	7,463	0	0
Spiny dogfish shark	41,821	-	48,094	-	52,027	479,280	600	308,244	0	20800*
Cusk	39,978	-	35,654	-	2,645	547	8,034	286	0	0
White hake	27,564	-	26,316	-	9,416	609	2,934	97	0	0
Pollock	24,081	-	44,586	-	15,455	280	2,021	36	127	0
Skate wing	12,351	-	3,711	-	6,604	6,954	2,244	5	2642	0
Acadian redfish	11,479	-	11,048	-	2,559	13	2,818	14	0	0
Catfish/Wolffish	6,656	-	7,125	-	4,444	14	0	0	0	0
Monkfish liver	3,016	-	1,466	-	906	1	0	0	0	0
Monkfish tail	1,171	-	906	-	526	23	179	0	15	0
Winter flounder/blackbacks	1,020	-	1,626	-	1,435	21	1,529	9	787	0
Blues	568	-	20	-	568	20	0	0	0	0
Ling	203	-	3	-	0	0	0	0	0	0
Atlantic halibut	314	-	746	-	292	10	22	0	99	4
American plaice	114	-	96	-	7	0	1	0	0	0
Yellowtail flounder	7	-	66	-	32	1	27	0	0	0
Witch flounder	2	-	1	-	0	1	0	0	0	0
Silver hake	2	-	1	-	0	0	3	0	0	0
American lobster	0	-	0	-	10	0	0	0	0	0
Mackerel	0	-	0	-	554	0	0	0	0	0
Cunner	0	-	0	-	652	0	1,359	0	491	0
Barndoor skate	0	-	10	-	0	0	0	0	0	0
Whole monkfish	0	-	0	-	0	0	62	0	14	0
Bluefish	0	-	0	-	0	0	1,099	0	0	0
Skate whole	0	-	0	-	0	0	0	0	0	8585
Scups	0	-	0	-	0	264	0	0	0	0

*No spiny dogfish were landed in FY 2008 because they were fished for only on a state permit, outside the realm of Sector authority and record keeping.

Members of the Hook Sector were also permitted to fish in the Closed Area 1 Hook Gear Haddock Special Access Program (SAP) (Table 4.11), which is an area otherwise closed to vessels not participating in the SAP.

Table 4.11. Closed Area 1 Hook Gear Haddock Special Access Program. FY 2004-FY 2007 Landings and Discards for Allocated Species and Species of Concern. Data for species other than haddock and cod were not collected for FY 2004, FY 2005, and FY 2006.

Species	FY 2004 Dealer Landings (pounds)	FY 2004 Discarded, Round Weight (pounds)	FY 2005 Dealer Landings (pounds)	FY 2005 Discarded, Round Weight (pounds)	FY 2006 Dealer Landings (pounds)	FY 2006 Discarded, Round Weight (pounds)	FY 2007 Dealer Landings (pounds)	FY 2007 Discarded, Round Weight (pounds)
Haddock	1,054,254	1,039,712	847,829	15,996	99,746	10,390	244,847	9,075
Cod	20,505	20,106	18,107	806	4,662	223	2,536	186
White hake	18217	369	18610	837	7084	-507	1,767	101
Yellowtail flounder	0	0	17	0	0	0	0	0
Winter flounder	0	0	0	17	0	0	0	0
American plaice	0	0	24	0	0	0	0	0
Witch flounder	0	0	0	0	0	0	0	0

4.4 Protected Resources

There are numerous species which inhabit the environment within the Northeast Multispecies management unit that are afforded protection under the Endangered Species Act of 1973 (Endangered Species Act [ESA]; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA). Protected species that occur within the affected area are identified in Table 4.12. Fourteen (14) species are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA. The following list of species protected either by the ESA, the MMPA, or both may be found in the environment utilized by the Northeast Multispecies fishery and the Hook Sector.

Table 4.12. Protected Species Found Within the Northeast Multispecies Management Unit (NEFMC, Amendment 13 FSEIS, Section 9.2.2).

Order/Genus/Family	Species	Status
Cetaceans	Northern 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
	Beaked whale (<i>Ziphius and Mesoplodon spp.</i>)	Protected

Table 4.12. Protected Species Found Within the Northeast Multispecies Management Unit (NEFMC, Amendment 13 FSEIS, Section 9.2.2).

Order/Genus/Family	Species	Status
	Pilot whale (<i>Globicephala</i> spp.)	Protected
	Risso's dolphin (<i>Grampus griseus</i>)	Protected
	White-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected
	Common dolphin (<i>Delphinus delphis</i>)	Protected
	Spotted and striped dolphins (<i>Stenella</i> spp.)	Protected
	Bottlenose dolphin (<i>Tursiops truncatus</i>)	Protected
	Harbor porpoise (<i>Phocoena phocoena</i>)	Protected
Sea Turtles	Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered
	Kemp's Ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered
	Green sea turtle (<i>Chelonia mydas</i>)	Endangered*
	Loggerhead sea turtle (<i>Caretta caretta</i>)	Threatened
Fish	Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered
	Atlantic salmon (<i>Salmo salar</i>)	Endangered
Pinnipeds	Harbor seal (<i>Phoca vitulina</i>)	Protected
	Gray seal (<i>Halichoerus grypus</i>)	Protected
	Harp seal (<i>Phoca groenlandica</i>)	Protected
	Hooded seal (<i>Cystophora cristata</i>)	Protected
Birds	Piping plover (<i>Charadrius melodus</i>)	Endangered
	Roseate tern (<i>Sterna dougallii dougalli</i>)	Endangered

* Green turtles in United States 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 United States waters.

4.4.1 Species Not Likely to be Affected

Although shortnose sturgeon and salmon belonging to the GOM Distinct Population Segment (DPS) of Atlantic salmon occur within the general geographical area covered by the NE Multispecies FMP and the Hook Sector, they are unlikely to occur in the area where the fishery operates, given their numbers and distribution. Therefore, these species are not likely to be affected by the Sector.

4.4.2 Summary of Species Likely to Be Affected

It is expected that all of the remaining species identified have the potential to be affected by the operation of the Sector. Summary information is provided here that describes the general distribution of cetaceans, pinnipeds, and sea turtles within the management unit for the Hook Sector. Background information on the range-wide status of marine mammal and sea turtle species that occur in the area and are known or suspected of interacting with multispecies fishing gear can be found in a number of published

documents. These include sea turtle status reviews and biological reports (NMFS and United States Fish and Wildlife Service [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; 1992), marine mammal stock assessment reports (e.g. Waring et al. 2005; 2007), and other publications (e.g., Clapham et al. 1999; Perry et al. 1999; Best et al. 2001; Perrin et al. 2002).

4.4.2.1 Sea Turtles

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras. 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 GOM waters in the summer and fall (Shoop and Kenney 1992; STSSN database).

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. Based on the most recent information, a decline in the annual nest counts has been measured or suggested for four of five western Atlantic loggerhead nesting groups (NMFS and USFWS 2007a). 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 (Baleen Whales and Sperm Whale)

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the GOM and GB, to low latitude winter calving grounds (Perry et al. 1999; Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999; Waring et al. 2005). 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).

In comparison to the baleen whales, sperm whale distribution occurs more on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2005). However, sperm whale distribution in United States EEZ waters also occurs in a distinct seasonal cycle (Waring et al. 2005). 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. 2005). Distribution extends farther 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).

The most recent Marine Mammal Stock Assessment Reports (SARs) (Waring et al. 2008) reviewed the current population trend for each of these cetacean species within United States EEZ waters, as well as provided information on the estimated annual human-caused mortality and serious injury and a description of the commercial fisheries that interact with each stock in the United States Atlantic. Information from the SAR is summarized below.

For North Atlantic right whales, the available information continues to indicate a decline in the population trend (Waring et al. 2008). While calf production in recent years has been higher than recorded in the late 1990s, the minimum rate of annual human-caused mortality and serious injury to right whales averaged 3.2 per year (Waring et al. 2008). Recent mortalities included six female right whales, including three that were pregnant at the time of death (Kraus et al. 2005). The total number of North Atlantic right whales is estimated to be less than 400 animals.

The North Atlantic population of humpback whales is estimated to be 11,570, although the estimate is considered to be negatively biased (Waring et al. 2008). The best estimate for the GOM stock of humpback whales is 847 whales (Waring et al. 2008). Current data suggest that the trend for the GOM stock is increasing. The best estimate available for the western North Atlantic fin whale stock is 2,269 whales but is considered a very conservative estimate (Waring et al. 2008). The population trend was considered positive for the SAR, although the current productivity rate is unknown. Total numbers of sperm whales, sei whales, and minke whales in the North Atlantic or in United States waters are unknown, and there are insufficient data to determine population trends for these cetacean species (Waring et al. 2008). Based on data available for selected areas and time periods, the minimum population estimate for each species is 128, 3,539, and 3,312 for sei whales, sperm whales, and minke whales, respectively (Waring et al. 2008).

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

4.4.2.3 Small Cetaceans (Dolphins, Harbor Porpoise, and Pilot Whale)

Numerous small cetacean species (dolphins, pilot whales, and harbor porpoise) occur within the area from Cape Hatteras through the GOM. Seasonal abundance and distribution of each species in Mid-Atlantic, GB, and/or GOM waters varies with respect to life history characteristics. Some species primarily occupy continental shelf waters (e.g., white sided dolphins, harbor porpoise), while others are found primarily in continental shelf edge and slope waters (e.g., Risso's dolphin), and still others occupy all three habitats (e.g., common dolphin, spotted dolphins, striped dolphins). Information on the western North Atlantic stocks of each species is summarized in Waring et al. (2005).

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). Grey seals are the second most common seal species in United States EEZ waters, occurring primarily in New England (Katona et al. 1993; Waring et al. 2005). Pupping colonies for both species are also present in New England, although the majority of pupping occurs in Canada. Harp and hooded seals are less commonly observed in United States EEZ waters. Both species form aggregations for pupping and breeding off of eastern Canada in the late winter/early spring and then travel to more northern latitudes for molting and summer feeding (Waring et al. 2005). However, individuals of both species are also known to travel south into United States EEZ waters, and sightings as well as strandings of each species have been recorded for both New England and Mid-Atlantic waters (Waring et al. 2005).

4.5 Human Communities/Social Economic Environment

For centuries, New England has been identified with fishing. GB, GOM, and Stellwagen Bank all remain active fishing grounds where generations have ventured and many have died in pursuit of the seafood prized in the region. According to the NE Multispecies Amendment 13, Supplemental Environmental Impact Statement (SEIS), 1,888 active vessels landed \$105 million worth of groundfish in 2000. The majority of this fleet used otter trawl gear, followed by hook-and-line and gillnets. Justification for a region-wide, port-by-port consideration of socio-economic environmental impacts from the proposed action can be found in the Amendment 13 SEIS.

The impacts of the Proposed Alternatives must be considered across all communities. Impacts on human communities can be defined as the effects that a fisheries management action may create in people's way of life, cultural traditions, and community. Changes in flexibility, opportunity, stability, certainty, safety, and other factors may all catalyze and be affected by these impacts. Though it is possible that the social impacts of certain fishery management measures under consideration would be experienced solely by one community group; it is more likely that some impacts would be experienced across communities, gear cohorts, and vessel size classes.

4.5.1 Overview of the GB Hook Fishery

For FY 2009, the GB Hook Sector, which operates out of Chatham and Harwichport, is comprised of 24 vessels, 23 of which are active fishing platforms. Many of these fishermen are second- or third-generation fishermen that hope to pass along this tradition to their sons and daughters. The very name Cape Cod speaks volumes about its centuries-old connection to fishing. Since 1602, when Bartholomew Gosnold first landed in what is now Provincetown, fishing has drawn people to Cape Cod. The Pilgrims established fishing villages along the length of this sandy peninsula, and several of these endure today. Promotional material for the area features fishing as a primary attraction for tourism and retirement activity. Seafood originating from towns such as Chatham, Wellfleet, and Eastham is renowned throughout New England for its freshness and quality. A drive through these towns at dawn reveals a working world of fishermen, trucks, and boats busily plying their trade. A wide range of ancillary businesses, such as gear suppliers, fuel, bait, marine equipment, fish markets, and restaurants, depend on this industry for survival. Little hard socio-economic data exist to measure the financial scope of this industry, but it is becoming a priority. For example, former Massachusetts Governor, Mitt Romney created the Cape Cod Regional Competitiveness Council. NEFMC Chairman John Pappalardo was on the State of Massachusetts Fisheries/Agriculture Subcommittee and has recommended that the NEFMC begin compiling this kind of data so there will be a better picture of the financial and social value of commercial fishing to the Cape and Islands in the future.

Hall-Arber et al. (2001) noted that fishing is a natural occupation for those on the Cape and Islands. Additionally, the substantial distances to major population centers (i.e., Boston and Providence) limit alternative employment. A cause and effect of this is tourism, which rivals the fishing industry in importance to the region. However, tourism is primarily restricted to mild seasons and major holidays; fishing is often regarded as a year-round enterprise.

Chatham is known as the most active port in the Cape and Islands sub-region. Though small, the town has an important hook-and-line fleet, in addition to a growing number of gillnetters and lobstermen. As concluded by the Marine Fisheries Initiative (MARFIN) Report, “Innovation and flexibility are hallmarks of Chatham fishermen. The development of niche fisheries (e.g., dogfish and the live fish market) is something that respondents reported with pride.”

Chatham is a geologically diverse area that supports a multitude of commercial, recreational, and charter fisheries. In 2004, it was estimated that there were 279 commercial vessels at the Chatham Fish Pier and Stage Harbor mooring areas, two-thirds of which are small skiffs used for shellfishing. MARFIN found that there were 64 vessels with docking permits for the town Pier, including 22 gillnetters, 17 demersal long-liners, 5 combination vessels, 8 lobster vessels, several handline vessels and draggers, and four party-charter vessels. The town Pier facilities are maintained by the town of Chatham and are dedicated solely to commercial fishing interests. In addition to the Town Pier, the majority of fishing activity takes place at two private docks adjacent to the town’s facility.

The Chatham fleet primarily targets GB stocks of groundfish and also spiny dogfish sharks. Major species landed include cod, haddock, cusk, pollock, skates, and white hake. Shellfish, especially lobster, are also a substantial component of the Chatham fishing industry. There are numerous shoreside support services for the local fishing industry including fish buyers, cutters, gear workers, and shellfish shuckers. Some fishermen in this area only fish part of the year; others switch their gear to fish for longer periods of time. A majority of vessels in Chatham are owner-operated.

Chatham established itself as an important port for landing groundfish in FY 1999 and FY 2000. During these years, Chatham and Harwichport averaged 5,980,850 pounds and \$7,254,100 in revenues, in those same years, an average of 95 multispecies vessels homeported in Chatham and Harwichport. Chatham's overall community dependence on multispecies as a percentage of total fisheries revenues from federally-permitted vessels averaged about 71 percent during those years. It is likely, however, that at least some of the active groundfish vessels in these ports are even more than 71 percent dependent on the multispecies fishery.

4.5.2 Georges Bank Cod Hook Sector

At the time of writing, the Hook Sector is halfway through its fifth complete season. In FY 2004, its first year of operation, the sector had 58 vessels; in FY 2009 there will be 24 vessels (23 active fishing platforms) pursuant to the FY 2009 Hook Sector Operations Plan. As can be seen from Figure 4.6, the total net revenue (not including ice and fuel expenses) was \$2.9 million for FY 2004 and 2.2 million for FY 2005. The revenue for FY 2006 is an estimate based on one Sector member that took 19 percent of the Sector trips for that year; data for the Sector as a whole is not available.

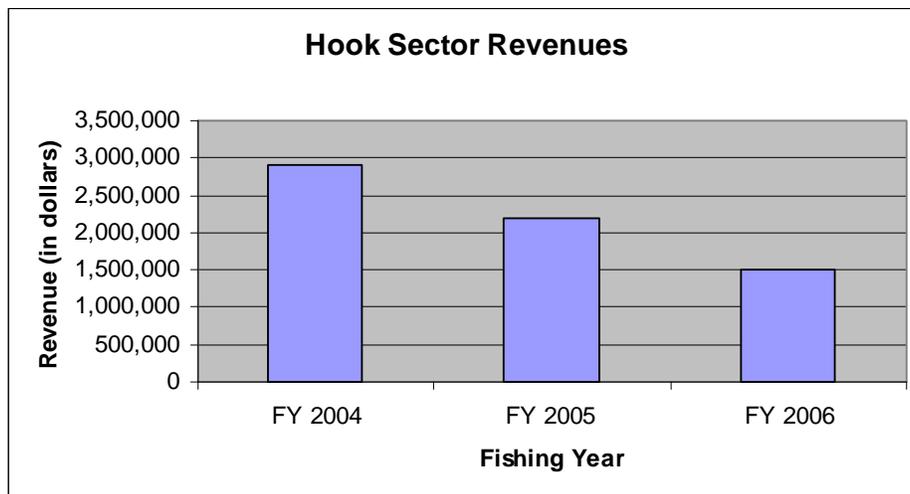


Figure 4.6. Hook Sector Revenue, FY 2004-FY 2006 (revenue for FY 2006 is an estimate based on one Sector member that took 19% of the sector trips for that year). Revenue for FY 2007 and FY 2008 (to date) is not available.

5.0 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVE

This Section of the Hook Sector Environmental Assessment (EA) describes the impacts of the proposed action (i.e., proposed FY 2009 Hook Sector; the Preferred Alternative) and the No Action Alternative (the Common Pool fishery) (summarized in Table 5.1). The following categories of effects will be discussed and assessed for each Valued Ecosystem Component (VEC): the expected direct and indirect effects; the past, present and reasonably foreseeable future effects from fishing actions; the Georges Bank Cod Fixed Gear Sector effects; and past, present, and reasonably foreseeable future effects from non-fishing actions.

The Preferred Alternative is the approval of the Georges Bank (GB) Cod Hook Sector Operations Plan and receipt of an allocation of GB cod for FY 2009. The Sector would be allocated a hard total allowable catch (TAC) of GB cod and would be subject to the regulations implemented under the Operations Plan

The No Action Alternative is the disapproval of the Operations Plan and no submission of a modified Operations Plan. While the Hook Sector would be available under the No Action Alternative, all associated vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent FW adjustments to the Northeast (NE) Multispecies Fishery Management Plan (FMP). Therefore, the Hook Sector would not receive an allocation of GB cod for FY 2009.

5.1 Impacts of Alternatives by Valued Ecosystem Component

As discussed in Section 4.0 (Affected Environment), the VECs analyzed in terms of environmental impacts from the preferred and no action alternatives include habitat, allocated species, and other landed species, bycatch/discards, protected resources, and human communities (i.e., ports of Chatham and Harwichport, and the Sector participants themselves). This section shall describe and characterize the impacts of the proposed action in comparison to the No Action Alternative.

5.1.1 Direct and Indirect Impacts of Hook Sector

The comparative direct and indirect impacts of the proposed FY 2009 Hook Sector to the Common Pool fishery are described compared in the sections below. These impacts are summarized in Table 5.1.

Table 5.1. Direct and Indirect Effects of FY 2009 Hook Sector (Preferred Alternative) Relative to the Common Pool Fishery (No Action Alternative) on the “Valued Ecosystem Components” (VECs). Further elaboration on the meaning of the impacts is provided in a key at the end of the table.

Harvesting Rules	Valued Ecosystem Components (VECs)					
	Habitat Including Essential Fish Habitat	Allocated Species/ Other Landed Species	Bycatch/ Discards	Protected Resources	Human Community Impact	
					Ports Chatham/ Harwichport	Hook Sector Participants
Aggregate sector allocation (Georges Bank cod total allowable catch)	(+)	(+)	(+)	(+)	(+)	(+)
Monthly Quota Targets	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Weekly Quota Targets	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Days-at-Sea	(L+)	(L+)	(L+)	(+)	(+)	(+)
Sector call-in	NEGL	(L+)	(L+)	(+)	NEGL	NEGL
Days-at-Sea Transfer/Lease	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Full retention of legal-size cod	NEGL	(+)	(+)	NEGL	(+)	(+)
Species trip limits (exemption)	NEGL Allocated Species NEGL Other Landed Species	(+) Allocated Species, Winter Flounder and Yellowtail NEGL Other Landed Species	(+) Allocated Species, Winter Flounder and Yellowtail NEGL Other Landed Species	NEGL	(+)	(+)
Hook Size	(+)	(+)	(+)	(L+)	(+)	(+)
Georges Bank Seasonal Closures (exemption)	(L-)	NEGL Allocated Species (L-) Other Landed Species	NEGL Allocated Species (L-) Other Landed Species	(L-)	(+)	(+)

Harvesting Rules	Valued Ecosystem Components (VECs)					
	Habitat Including Essential Fish Habitat	Allocated Species/ Other Landed Species	Bycatch/ Discards	Protected Resources	Human Community Impact	
					Ports Chatham/ Harwichport	Hook Sector Participants
Closed areas	(L-)	NEGL Allocated Species (L-) Other Landed Species	NEGL Allocated Species (L-) Other Landed Species	(L-)	(+)	(+)
Operating area	(+)	(L+)	(L+)	(L+)	(+)	(+)
Gear Restrictions	(+)	(+)	(+)	(+)	(+)	(+)
Distribution and Pooling Days-at-Sea	NEGL	NEGL	NEGL	NEGL	NEGL	NEGL
Observer notification requirements in the United States/ California resource management area (exemption)	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Additional Days-at-Sea management measures (exemption)	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Prorating of Days-at-Sea and landings (exemption)	NEGL	NEGL	NEGL	NEGL	(+)	(+)
Summary of impacts	(+)	(+)	(+)	(+)	(+)	(+)

Key to Table 5.1 (above)

Impact Definition			
VEC	Direction		
	Positive (+)	Negative (-)	Negligible (NEGL)
Allocated Species, Other Landed Species, Bycatch Protected Resources	Actions that increase stock/population size	Actions that decrease stock/population size	Actions that have no positive or negative impact 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

Impact Definition			
VEC	Direction		
	Positive (+)	Negative (-)	Negligible (NEGL)
Human Communities	Actions that increase revenue and social well being of fishermen and/or associated businesses	Actions that decrease revenue and social well being of fishermen and/or associated businesses	Actions that have no positive or negative impact on revenue and social well being of fishermen and/or associated businesses.
Impact Qualifiers:			
Low (L; as in low positive or low negative):	To a lesser degree		
High (H; as in high positive or high negative):	To a substantial degree		
Likely	Some degree of uncertainty associated with the impact		

5.1.1.1 Physical Environment/Habitat

Under the Preferred Alternative, the FY 2009 Hook Sector would have minimal impacts on benthic/demersal habitat. The Hook Sector only utilizes hook-and-line gear. Hook gear is known to have minimal impacts on habitat (NMFS 2004). Table 5.2 further describes the habitat implications of sector allocation, including the hook sector. As stated in the EFH final rule (50 CFR Part 600; Department of Commerce, 2002), the intent of the EFH final rule “is to regulate fishing gears that reduce an essential habitat's capacity to support marine resources, not practices that produce inconsequential changes in the habitat”.

Table 5.2. Habitat Implications of Sector Allocation as Presented in the Amendment 13 FEIS. Note that this table does not contemplate every aspect of the Operations Plan (NEFMC, Am 13 FEIS, Section 5.3.6.7).

Alternative	Overall Habitat Impact	Feature	Description of Essential Fish Habitat Impact
Sector Allocation	Neutral Impact (0)	Approval of sector allocation proposal brought to National Marine Fisheries Service through Council. Sector decides about movement between sectors. Allocation based on documented catch. Hard total allowable catches by species.	As a management measure, sector allocation is not expected to have any significant habitat impacts.
Georges Bank hook/gillnet sector	Neutral Impact (0)	Approval of Georges Bank Hook Sector	This sector allocation program is not expected to have any significant habitat impacts, especially since hook gear has been deemed not to have adverse impacts on Essential Fish Habitat.

Furthermore, Sector fishing would only occur with low-impact gear and would cease completely with gear capable of catching GB cod if the TAC is achieved or DAS are exhausted. However, to date, the Fixed Gear Sector has yet to achieve its hard TAC. Hook size restrictions subject Participating Vessels to the same hook-and-line gear restrictions applicable to Common Pool vessels, and, therefore, no increased habitat impacts would occur. The Hook Sector vessels are exempt from hook limits applicable to the Common Pool. Allowing more hooks to be deployed by longlines would allow more gear to come into contact with the benthic/demersal habitat. This may cause minimal disturbance, but an overall a negligible impact on habitat because of the lack of habitat impacts associated with hook gear, and because the Hook Sector would have effort controls and TAC related closures which would limit fishing effort.

The GB Seasonal Closure/Spawning Season exemption has minimal impacts on habitat due to the exclusive use of hook gear during the closure. Even though this exemption would allow hook gear to be fished during the closure, any habitat interactions would be due to the gear type. Furthermore, because the Hook Sector is managed under a hard TAC based on the catch history of Hook Sector members, there would be no annual net increase in habitat interactions resulting from implementation of the Operations Plan. The Hook Sector vessels would restrict themselves to the GB Cod Hook Sector Area. By restricting themselves to this well-defined area, a more-accurate qualification and quantification of impacts on habitat may occur, facilitating effective fishery management decisions.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Therefore, no allocation of GB cod would be made to the Hook Sector and the fishermen would not be restricted to the GB Cod Hook Sector Area or to hook-and-line gear. Fishermen in the Common Pool fishery are allowed to switch to gears with greater impacts on habitat, which could lead to potential and increased negative interaction with habitats. Further, the Common Pool fishery is not limited to the Hook Sector Operating Area; resulting in fishing impacts in a larger geographic area.

The No Action Alternative is not expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act) and identified in the FMP.

Summary of Impacts: Direct and indirect impacts on the physical environment and habitat: The summary of impacts by the FY 2009 Hook Sector on physical environment and habitat is expected to be “positive” compared to the Common Pool fishery for the following reasons (Table 5.1):

- Aggregate Sector allocation: The use of low-impact hook gear in the sector, relative to the range of gear in the Common Pool fishery, results in a “positive” impact to benthic habitat, including essential fish habitat.

- Monthly and weekly quota targets: Quota targets have a negligible impact on habitat due to the ability of the sector manager to redistribute the catch quota.
- DAS allocations set an absolute maximum on fishing effort and, therefore, habitat interaction for the Hook Sector, having a low positive impact on habitat.
- Sector call-in: Sector call-in notification requirements have no material affect on habitat; accordingly, a negligible impact is ascribed for this Harvest Rule on habitat.
- Days at Sea transfer/lease: There is no net change in fishing effort resulting from this Harvest Rule. Accordingly, this exemption has a negligible impact on habitat.
- Full retention of legal-size cod: Retaining all caught legal-sized cod has no material effect on habitat: accordingly, a negligible impact is ascribed for this Harvest Rule on habitat.
- Species trip limit: Exempting a trip limit for GB cod has no material effect on habitat: accordingly, a negligible impact is ascribed for this Harvest Rule on habitat. Trip limits for other species (white hake, winter flounder, and yellowtail) also have a negligible impact on habitat.
- Hook size: 12/0 circle hooks have low-impact on habitat relative to the range of Common Pool fishery gear, resulting in a positive impact to habitat.
- Georges Bank Seasonal Closure (exemption): This exemption would expand the area and timing of hook gear interactions with habitat. However, only hook gear may be used, limiting the nature and extent of interactions with habitat. Therefore, this exemption has a low negative effect on habitat.
- Closed Areas: This exemption would expand the area and timing of hook gear interactions with habitat within the CAI SAP (Special Access Program). However, only hook gear may be used, limiting the nature and extent of interactions with habitat. Therefore, this exemption has a low negative effect on habitat.
- Operating Area: The use of low-impact fixed gear in the sector, relative to the range of gear in the Common Pool fishery, results in a “positive” impact to benthic habitat.
- Gear restrictions: Gear restrictions require that Hook Sector members would pursue groundfish with no gear other than jigs, non-automated demersal longline, or handgear. These gear restrictions have low-impact on habitat relative to the range of Common Pool fishery gear, resulting in a “positive” impact to habitat.
- Distribution and pooling of DAS: This Harvest Rule seeks to pool and redistribute the allocated DAS, resulting in no net increase nor decrease in Sector fishing gear and habitat interactions. Accordingly, this Harvest Rule has a “negligible” impact on habitat.

- Observer notification requirements in the US/Canada Resource Management Area: This notification exemption has no impact on habitat. Accordingly, this Harvest Rule has a “negligible” impact on habitat.
- Additional DAS management measures: This Harvest Rule neither increases nor decreases sector fishing effort. Accordingly, this Harvest Rule has a negligible impact on habitat.
- Prorating of DAS and landings: This Harvest Rule results in no net increase, nor decrease, in hook gear and habitat interactions. Accordingly, there is a negligible impact of this Harvest Rule on habitat/EFH.

5.1.1.2 Allocated Species and Other Landed Species

This section addresses the likely impacts of the Preferred Alternative (i.e., approval of the FY 2009 Hook Sector and TAC) compared with the No Action Alternative to GB cod and other landed species managed under the NE Fisheries FMP. Impacts are described below by Harvest Rule.

1. **Aggregate Sector Allocation:** Under the Preferred Alternative, in FY 2009 the Hook Sector would be allocated a hard TAC which sets absolute maximum poundage of GB cod that the Sector can catch each year which ensures operations of the Hook Sector are consistent with the NE Multispecies FMP and the GB cod rebuilding program. Once the Hook Sector achieves its hard TAC for GB cod, they must stop fishing with all gear capable of catching GB cod. Therefore, fishing for other species that may be caught with GB cod also ceases so that the Hook Sector members are prevented from catching any bycatch of GB cod and exceeding their TAC.

In FY 2004, the 58 vessels of the Sector were allocated 817,915 lbs (371 mt) GB cod. As of April 30, 2005, the Hook Sector had landed 286,190 lbs (130 mt) or 35 percent of its hard TAC. Figure 5.1 summarizes the total allocated catch and actual landings of GB cod of the Hook Sector for FY 2004 through FY 2008 (as of September 30, 2008).

In FY 2004, the Hook Sector was able to secure and administer an experimental fishery under an Exempted Fishing Permit (EFP) to test the feasibility of a directed Special Access Program (SAP) fishery for GB haddock. Vessels participating in the EFP demonstrated their ability to stay below the haddock total allowable catch (TAC) and the cod bycatch TAC and, as a result, were approved for the SAP. The SAP was equally successful. Overall, in FY 2004, haddock accounted for the largest portion of the Hook Sector’s landings, at 77 percent, followed by GB cod at 14 percent and spiny dogfish at 2 percent. Figure 5.2 summarizes the GB cod and haddock landings from FY 2004 through FY 2007. Table 5.3 summarizes the total species landed by the Hook Sector from FY 2004 through FY 2007.

In FY 2005, the 49 vessels in the GB Cod Hook Sector (Sector) were allocated 1,003,103 lbs (455 mt) of GB cod and harvested 275,743 lbs (125 mt) or approximately 27 percent of the allocation (Figure 5.1). In addition, Sector members shifted their effort from stocks of concern (cod) onto healthy stocks (haddock) by participating in the Closed Area I (CAI) Haddock Special Access Program (SAP) from October 1 to November 15. Using bait that minimizes cod catch, 21 vessels made 270 trips into CAI to land 847,829 lbs (385 mt) of haddock while encountering only 18,913 lbs (8.6 mt) of cod resulting in a 45 to 1 haddock to cod catch ratio. Overall, in FY 2005, haddock accounted for the largest portion of the Hook Sector's landings at 71 percent followed by GB cod at 17 percent (Figure 5.2). Spiny dogfish accounted for 3 percent of the Hook sectors total landings (Table 5.3).

In FY 2006, the thirty-six vessels in the GB Cod Hook Sector were allocated 1,355,843 lbs (615 mt) of GB cod and harvested 179,616 lbs (89 mt) or approximately 14 percent of the allocation (Figure 5.1). In addition, Sector members again shifted their effort from stocks of concern (cod) onto healthy stocks (haddock) by participating in CAI Haddock SAP from October 1 to November 15. Using bait that minimizes cod catch, Sector vessels made 58 trips into CAI to land 99,746 lbs (45 mt) of haddock while encountering only 4,885 lbs (2.2 mt) of cod resulting in a 20-to-1 haddock-to-cod catch ratio. In FY 2006, haddock accounted for the largest portion of the Hook Sector's landings (48 percent) followed by GB cod at 33 percent (Figure 5.2). Spiny dogfish accounted for 9 percent of the Hook sectors total landings (Table 5.3).

In FY 2007, the twenty five vessels in the Hook Sector were allocated 1,488,119 lbs (675 mt) of GB cod. As of April 30, 2008, the Hook Sector had caught 188,843 lbs (86 mt) or 12.7 percent of its hard TAC: 71 mt (155,725 lbs) were landed and converted into 82 mt (181,380 lbs) of live weight GB cod. In addition, Sector members shifted their effort from stocks of concern (cod) onto healthy stocks (haddock) by participating in the Closed Area I (CAI) Haddock Special Access Program (SAP) from October 1 to November 15. Using bait that minimizes cod catch, Sector vessels made 89 trips into CAI to land 244,874 lbs (111 mt) of haddock while encountering only 2536 lbs (1.2 mt) of cod resulting in a 97-to-1 haddock-to-cod catch ratio. The 89 trips in the SAP accounted for 81.9 percent of the Hook Sector's yearly haddock landings. Overall, in FY 2007, haddock accounted for the largest portion of the Hook Sector's landings at 62.5 percent followed by GB cod at 33 percent (Figure 5.2). Cusk accounted for 1.7 percent of the Hook Sectors total landings (Table 5.3).

In FY 2008, the 19 vessels in the Hook sector were allocated 1,450,566 lbs (658 mt) of GB cod. As of September 30, 2008, the Hook Sector had caught 46,825 lbs (21 mt) (Figure 5.1). The expected Hook Sector landings for GB cod are projected to be about 122,435 lbs (55.5 mt), including both landings and discards (Figure 5.3). The expected catch for GB cod was derived from a slope line equation based upon the number of vessels versus the total catch from FY 2004, FY 2005, FY 2006, and FY

2007 (where x is the expected cod catch and y is the number of permitted vessels). The estimation of expected catch for FY 2008 includes the assumptions that the number of trips, catch to boat ratio, DAS, and SAP will be similar to those of previous fishing years.

Other Fisheries

Since FY 2004, Sector members have participated in other federally managed fisheries, most notably bluefin tuna, and American lobster. Additional activities included commercial shell fishing and charter fishing. The Sector is not required to track members’ landings or efforts in these fisheries; however, Sector members’ dependence on these other fisheries is recognized.

As can be seen, Hook Sector landings have decreased in each year of operation despite an exemption from the GB cod daily trip limit. This is most likely due to a combination of a decreased number of trips and vessels and relatively low local levels of GB cod. In FY 2008, the Hook Sector had 19 vessels; FY 2007, the Hook Sector had 25 vessels, down from 36 vessels in FY 2006, 49 vessels in FY 2005, and 58 vessels in FY 2004. For FY 2009, there will be 24 vessels in the Hook Sector. A summary of DAS will be highlighted under Harvest Rule Number 4.

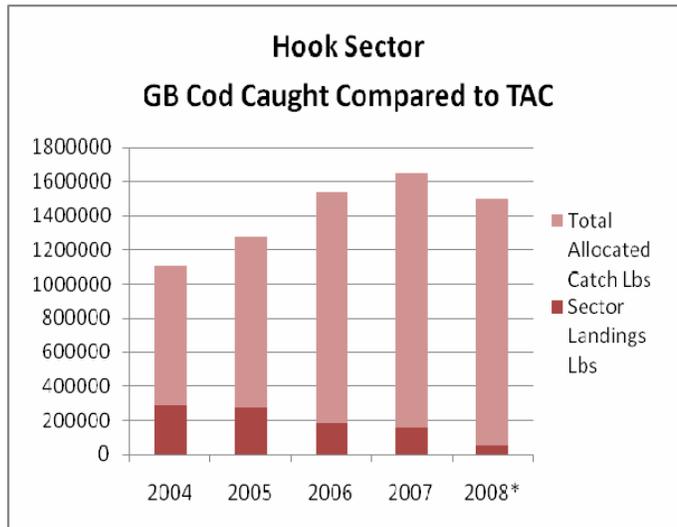


Figure 5.1. Total allowable catch and actual landings of GB cod of the Hook Sector for Fishing Year (FY) 2004, FY 2005, FY 2006, FY 2007, and FY 2008 (as of September 30, 2008).

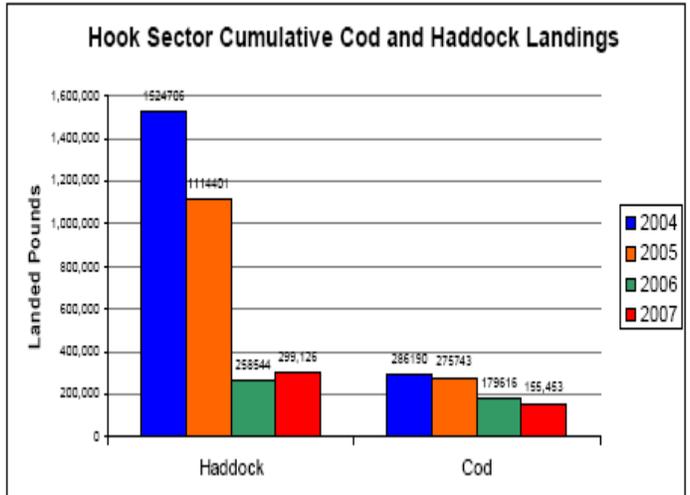


Figure 5.2. Total cumulative cod and haddock landings of the Hook Sector from FY 2004 though FY 2007.

Table 5.3. Species Landings (Lbs) by Hook Sector from FY 2004 through FY 2007.

Species	2004	2005	2006	2007
Haddock	1,524,706	1,114,401	258,544	299,126
Atlantic cod	28,6190	275,743	179,616	155,453
Spiny dogfish shark	41,821	48,094	52,027	600
Cusk	39,978	35,654	2,645	8,034
White hake	27,584	26,316	9,416	2,934
Pollock	24,081	44,586	15,455	2,021
Skates wings	12,351	3,711	6,604	2,244
Redfish/ocean perch	11,479	11,048	2,559	2,818
Atlantic wolfish	6,656	7,125	4,444	1,032
Whole Goosefish	3,016	1,466	906	62
Goosefish tails	1,171	906	526	179
Winter flounder	1,020	1,626	1,435	1,529
Atlantic halibut	314	746	292	22
Ocean pout	203	3	0	0
Witch flounder	114	96	7	0
Yellowtail flounder	7	66	32	27
Witch flounder	2	1	0	0
Bluefish	0	1,040	568	1,099
Whiting	0	0	0	3
Scup	0	0	0	264
Cunner	0	0	652	1,395
American plaice/dabs	0	0	7	1
Mackerel	0	0	564	0
American lobster	0	0	10	0
Barndoor skate	0	0	0	0
Ling	0	0	0	0

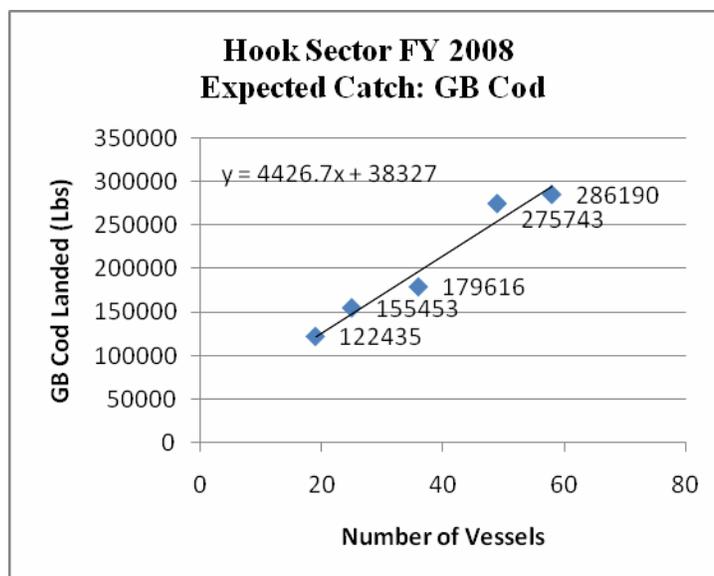


Figure 5.3. Calculation of Hook Sector expected catch of GB cod for FY 2008. The projected catch for the 19 vessels in the Hook sector is 122,435 lbs (55.5 mt), including both landings and discards.

Under the No Action Alternative, all Fixed Gear Sector vessels would remain in the Common Pool and operate under the rules which were implemented by Amendment 13 to the FMP and subsequent actions. Participating Vessels in the Common Pool do not have a hard TAC to constrain them consequently have little incentive to stop fishing upon reaching their 1,000 pound possession limit for GB cod; therefore, they may continue fishing while discarding GB cod that exceeds their daily limit. Also, the Sector's hard TAC functions as a fishing effort output control, helping to manage overfishing of GB Cod stocks.

Compared to the Common Pool, the Hook Sector would operate under an aggregate sector allocation (i.e., TAC); resulting in an overall positive impact for the GB cod stocks and other landed species because the TAC helps to manage overfishing by the Hook Sector. In each of the years past, the Hook Sector members have caught less than 35 percent of their TAC, which has ranged from 8 percent to 11 percent of the overall GB cod TAC. The Hook Sector has also participated in an EFP and SAP and demonstrated their ability to stay below the haddock TAC and cod bycatch TAC. Participation in the haddock SAP proved to provide a majority of the Sector's landings. Therefore, compared to the Common Pool, the Hook Sector fishing effort on GB cod is low (Figures 5.1 and 5.4).

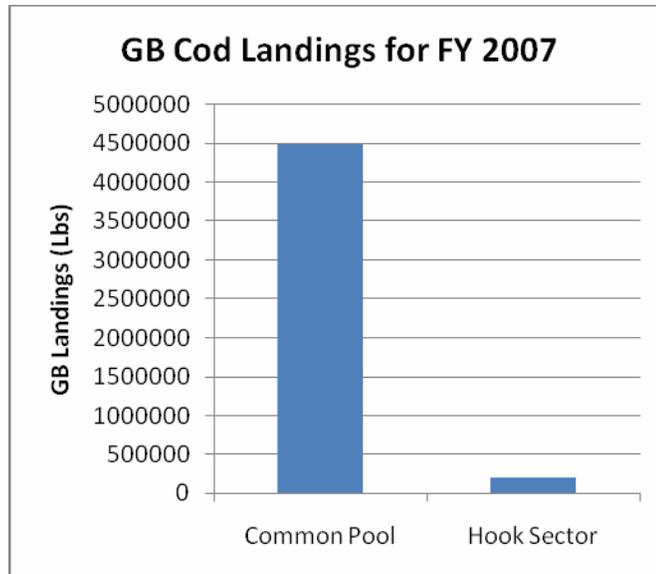


Figure 5.4 Georges Bank cod landings for FY 2007 for the Common Pool and Hook Sector fisheries.

2. **Monthly and weekly quotas:** Under the Preferred Alternative, the Hook Sector would set monthly and weekly quota targets for GB cod to help ensure that the catch is spread out evenly throughout the fishing year. This measure would generally ensure that the stock is not harvested in an overly intensive way that would be detrimental to the GB cod stock or their spawning aggregations. In the rare event that a monthly quota is reached, quota targets may stop groundfish fishing when targets are reached, ending the potential for interaction with other landed species. However, the Sector manager may (and has on one past occasion) redistribute monthly quota when the monthly quota is met. The rarity of meeting monthly quotas functionally results in the weekly quota never having been an issue in the past for the Hook Sector.

Table 5.4 depicts landings per month from FY 2004 through FY 2007. As noted by Table 5.4, the monthly quota targets were only triggered once. In FY 2004, the Sector fluctuated between 384 lbs (0.17 mt) and 68,286 lbs (30.97 mt) of monthly landings and only exceeded the monthly quota target (68,140 lbs or 30.91 mt) once, in a month that traditionally experiences high catch rates. In FY 2005, the monthly quota target was 83,568 lbs (37.9 mt), while the range of landings fell between 1,000 lbs (0.45 mt) and 55,201 lbs (25 mt). In FY 2006, the range of landings was 2,901 lbs (1.32 mt) to 30,113 lbs (13.66 mt) and fell well short of the 112,955 lb (51.24 mt) monthly quota target. In 2007, the monthly landings ranged from 0 lbs to 76,073 lbs (34.5 mt) compared to the 124,010 lbs (56.25 mt) monthly quota target. Since, 2004, weekly quota targets have never been triggered due to the fact that the Hook Sector has never achieved 95 percent of its TAC. According to monthly landing trends for FY 2007, May and June were peak months for catching GB cod with hook gear and, coinciding with the SAP, October and November are the peak months for haddock landings (Figure 5.5).

In sum, during the six years of operation, the Hook sector only exceeded the monthly quota for GB cod once (September 2004), and the overage was covered by underages from previous months. Weekly quotas have never been exceeded.

Therefore, monthly quota exceedences are rare in the Hook Sector. The incidental nature of these harvest exceedences results in negligible incremental impacts to the stock. In any event, the hard TAC is maintained helping to ensure management of GB Cod stock overfishing.

Table 5.4. Hook Sector GB Cod Monthly Quota vs. Landings for FY 2004 through FY 2007. The highlighted month indicates when a quota limit was triggered by the Hook Sector.

Month	2004		2005		2006		2007	
	Landing s (lbs)	Monthl y Quota Target (lbs)	Landing s (lbs)	Monthly Quota Target (lbs)	Landing s (lbs)	Monthly Quota Target (lbs)	Landing s (lbs)	Monthly Quota Target (lbs)
May	0*	68,140	42,052	83,568	22,662	112,955	76,073	124,010
June	0*	68,140	34,870	83,568	21,020	112,955	17,844	124,010
July	38,722	68,140	15,846	83,568	9,819	112,955	3,444	124,010
August	39,670	68,140	24,281	83,568	16,382	112,955	2,876	124,010
September	68,286	68,140	55,201	83,568	30,113	112,955	2,921	124,010
October	50,076	68,140	12,748	83,568	16,535	112,955	6,167	124,010
November	28,786	68,140	36,305	83,568	13,925	112,955	5,844	124,010
December	28,895	68,140	16,117	83,568	12,436	112,955	12,814	124,010
January	22,280	68,140	21,327	83,568	14,646	112,955	13,987	124,010
February	3,943	68,140	4,371	83,568	2,901	112,955	0	124,010
March	384	68,140	1,000	83,568	5,170	112,955	107	124,010
April	5,148	68,140	15,070	83,568	16,439	112,955	13,376	124,010
TOTAL	286,190	817,680	279,188	1,002,816	179,616	1,355,460	155,453	1,488,120

* Hook Sector implementation was delayed until July FY 2004

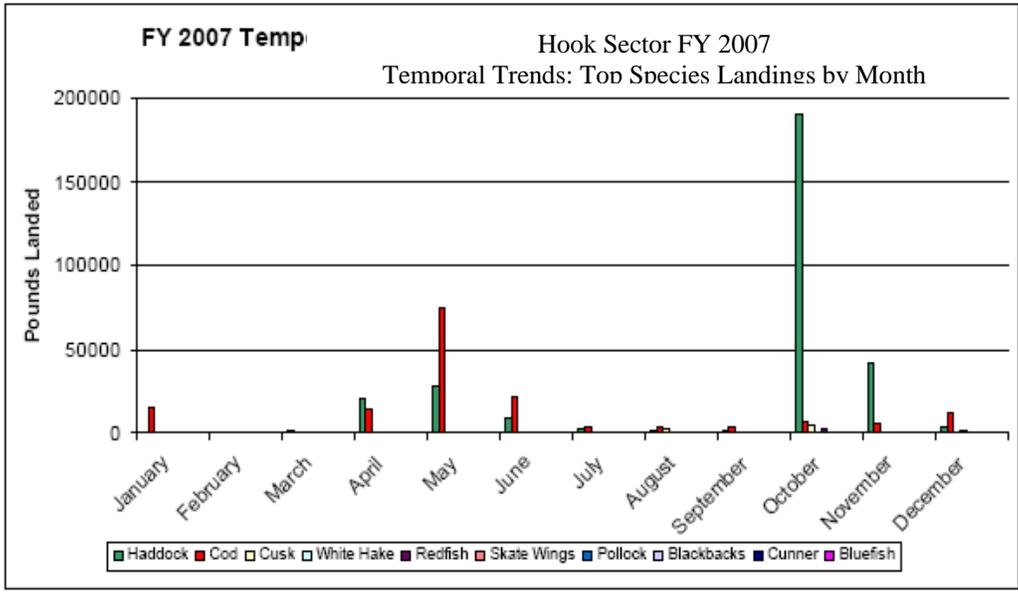


Figure 5.5. Temporal Trends for the Top Ten Species (by Landing) for FY 2007 Hook Sector.

Under the No Action Alternative, all Fixed Gear Sector vessels would remain in the Common Pool under the rules implemented in Amendment 13 and subsequent actions. Participating vessels operating under the Common Pool do not have monthly or weekly GB Cod quotas.

The Common Pool vessels are limited to landing 1,000 lbs of GB cod per day; thus, they may continue fishing while discarding any additional GB cod that exceeds this daily limit. Cumulatively, the Common Pool fishery harvests substantially more GB Cod on a monthly/weekly basis than the Sector does during a similar timeframe, exerting greater fishing pressure on GB Cod stocks than the Hook Sector in both the near-term and long-term.

Monthly and weekly quota targets functionally spread out the allocated GB cod catch evenly throughout the FY and help to ensure that the Hook Sector generally does not harvest their allocation in an overly intensive fashion to the detriment of the GB cod stock or to spawning aggregations. Though monthly quota exceedences may occur, they are incidental in nature. The cumulative catch of the Common Pool fishery landings dwarf the negligible impacts of the Sector’s incidental (rare) monthly quota exceedences, which require redistribution of monthly quota.

Thus, the monthly and weekly quota Harvest Rules have a negligible impact on allocated and other landed species due to 1) the rarity of quota exceedences, 2) the ability of the Sector manager to redistribute monthly quota when quota exceedences occur, 3) the low magnitude of catch relative to the Common Pool fishery, and 4) the fact that weekly quota targets have never been exceeded (and likely will not in the future) (Table 5.1).

3. **Days-at-Sea:** Under both alternatives, each participating Permit and Participating Vessel will be allocated DAS by the Regional Administrator through Amendment 13, as set forth on Exhibit B to the NE Multispecies FMP DAS allocations are input controls, setting an absolute maximum on the amount of effort members of the Hook Sector and the Common Pool can expend in attempting to catch the GB cod allocation each year. Under the Preferred Alternative, unlike the Common Pool fishery, the DAS and the hard TAC work as complementary input and output controls that limit catch of GB cod by the Hook Sector. DAS usage ensures that the effort of the Hook Sector members would be similar to the effort of those same vessels if they participated in the Common Pool fleet during the FY 2009. This also sets a corollary maximum on expected harvest of other landed species.

Figure 5.6 summarizes the DAS utilized by the Hook Sector from FY 2004 through FY 2007. In 2004, approximately 421 DAS were used by the Hook Sector. This number fell to approximately 351 in FY 2005, 249 in FY 2006, and 193.79 in FY 2007. This reduction was due to a combination of limited availability of GB cod, poor fishing conditions, fewer participants, and increased efficiency on those trips that were taken.

The DAS allocation results in an overall “low positive” impact for the GB cod stocks and other landed species as the DAS and the hard TAC work as complementary input and output controls that manage overfishing of GB cod by the Hook Sector (Table 5.1).

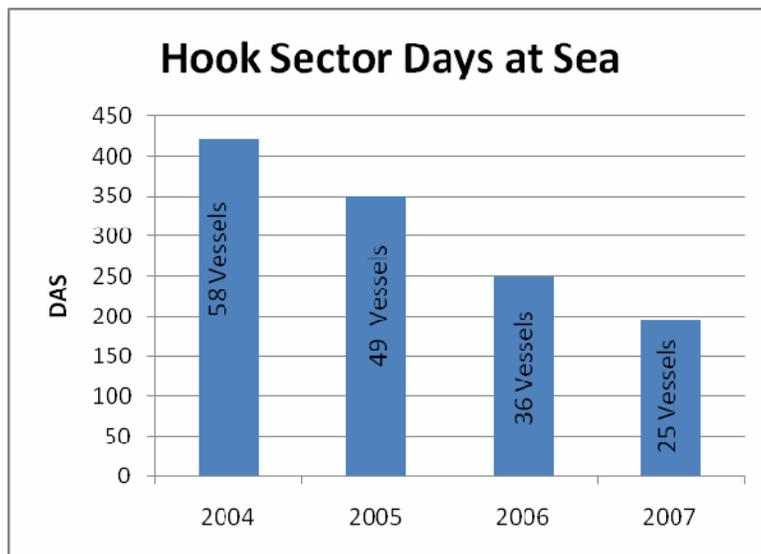


Figure 5.6. FY 2007 Days at Sea Summary for Hook Sector from FY 2004 through FY 2007.

4. **Sector call-in:** Under the Preferred Alternative, sector operations require levels of reporting and monitoring over and above that of the Common Pool. Each

Participating Vessel must notify the Manager or his designated representative within 24 hours prior to departing from port when using fishing gear capable of catching GB cod unless such Vessel is participating in the Sector Skymate Skytracker program, as verified by the Manager. Internally, these notification and reporting requirements include, but are not limited to, notification of the Manager or his designated representative prior to departing from port when using fishing gear capable of catching GB cod and submission of Vessel Trip Reports (VTRs) and dealer slips within 48 hours of landing. Externally, the Sector manager reports GB cod catch data to National Marine Fisheries Service (NMFS) on a monthly basis, until 90 percent of the TAC is achieved. At that point, reporting becomes weekly until 95 percent of the TAC is achieved (daily reporting henceforth). Accurate and timely monitoring and reporting of catch is essential for the Sector prevent overharvest of its TAC; these management rules also allow for enhanced and informed management of stocks.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool do not require sector call-in notification, but are required to make sailing declarations by Vessel Monitoring System (VMS) and must submit VTR's.

Compared to the Common Pool, increased monitoring efforts of the Hook Sector would result in a "low positive" impact on GB cod and other landed species as accuracy and timeliness of catch data would be improved and prevent (potential) overharvest of the sector's TAC (Table 5.1). Timely access to accurate catch data facilitates good fishery oversight and management.

5. **DAS Transfer/Lease:** Under the Preferred Alternative, the Participating Vessels and/or Permits in the Hook Sector 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

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessel operators in the Common Pool are allowed to temporarily acquire DAS from other vessels through a leasing program. The maximum number of DAS that can be leased is limited. The regulations allow a vessel to lease DAS only to a vessel that is within 10 percent of the DAS Leasing Program baseline length overall (LOA) and within 20 percent of the DAS Leasing Program baseline engine horsepower of the lessor's vessel.

Compared to the Common Pool, the leasing exemption by the Hook Sector would have a "negligible" incremental impact on allocated species and other landed species since fishing effort is neither increased nor decreased; rather, it is simply redistributed within the Sector (Table 5.1).

6. **Full retention of legal-sized cod:** Under the Preferred Alternative, the Fixed Gear Sector Operations Plan calls for the full retention of all legal-sized GB cod harvested during any fishing operations. This Harvest Rule would result in no regulatory discards of legal-sized GB cod by the Hook Sector. Furthermore, the full retention exemption ensures that all legal-sized GB cod caught by Hook Sector members would be landed and counted against the Hook Sector TAC. This management measure reduces the negative impact of the Hook Sector on GB cod through regulatory discards of legal-sized GB cod that are imposed upon the Common Pool.

Regulatory discarding, and overfishing of GB cod has not occurred during the life of the Hook Sector. In FY 2004 and FY 2005 no discard data was available. In FY 2006, 17,518 lbs (7.9 mt) of GB cod were discarded due to predation (dogfish, seals, slime eels) or sublegal size. Similarly, in FY 2007, 7,463 lbs (3 mt) of GB cod were discarded.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool are regulated by a GB cod landing limit of 1,000 pounds per day. Common pool vessels are not required to cease fishing when they reach the daily landing limit of cod, but must discard any additional cod that is caught. Exceeding this limit results in discards in the Common Pool fishery above what the same vessels would discard in the sector.

Compared to the Common Pool, the full retention of GB cod by the Hook Sector would result in a “positive” impact on GB cod as it would count GB cod against TAC and would dramatically reduce ecologically and economically inefficient discard scenarios (Table 5.1).

7. **Species trip limits:** Under the Preferred Alternative, the Hook Sector Operations Plan seeks an exemption from both the daily landing and trip limit for cod because a TAC would be set. This exemption would allow vessels to operate more efficiently reduce regulatory discarding, and may reduce fishing time if the TAC is caught prior to the end of the fishing year. Once the TAC is reached, impacts on other landed species may also be reduced. There would be trip limits for White hake (1,000 lbs per DAS), GB winter flounder (2,000 lbs per trip), and all Yellowtail (100 lbs per trip).

In FY 2004, there were 71 trips where Hook Sector members caught more than the 1,000 pound limit of GB cod to which the Common Pool (non-sector vessels) must adhere to. Due to the exemption from the daily trip limit, the Hook Sector landed 35,616 lbs (16 mt) of GB cod that would have been otherwise discarded in FY 2004. In 2005, this increased by over 40 percent to 51,247 lbs (23 mt) landed that would have been otherwise discarded. In 2006, 41,498 lbs (19 mt) were retained and not discarded. In FY 2007, there were 41 trips where Hook Sector members

caught more than the 1,000 pound limit of GB cod. This translated into 77,429 lbs (35 mt) of landed GB cod that did not have to be discarded. The exemption from the daily trip limit allows the Hook Sector to more efficiently retain and not discard legal-size, marketable codfish.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool are regulated by an established trip limit; however, they may land up to 1,000 lbs of GB cod per day. Daily limit is per 24 hours of DAS, or any portion thereof. Trips longer than 24 hours of DAS can land more fish based on their DAS (i.e., 1,600 lbs for 25 hours of DAS, but no more than 10,000 lbs).

Compared to the Common Pool, the exemption from the species trip limit would result in a “positive” impact on GB cod since cod are not discarded when more than 1,000 lbs are landed; and are efficiently counted towards the TAC without wasteful discarding.

Trip limits in this Harvest Rule for winter flounder and yellowtail are more restrictive, hence, environmentally protective than the Common Pool fishery: the trip limit for GB winter flounder in this Harvest Rule is 2,000 lbs per trip, whereas the limit for winter flounder in the Common Pool fishery is 5,000 lbs per trip (50 CFR part 648.86). Similarly, the yellowtail trip limit in this Harvest Rule is 100 lbs per trip; however, the Common Pool fishery has a 250 lb per trip limit for trips taken during April-May and October-November, and a 3,000 lb per trip limit for fishing trips taken during June-September and December-March (50 CFR part 648.86). Therefore, these more protective trip limits for winter flounder and yellowtail result in a positive impact to these species.

For white hake and other landed species under the NE Multispecies FMP not explicitly called out in the Harvest Rule, this Harvest Rule would yield a “negligible” impact on these other landed species as the Hook Sector operates under Common Pool fishery rules for other landed species managed under the NE Multispecies FMP (i.e., the “Plan”) (Table 5.1).

8. **Hook Size:** Under both alternatives, hook size limits mandate the size 12/0 circle hook for both the Hook Sector and the Common Pool fishery. This hook size mandate reduces the amount of undersized GB cod caught, thus reducing regulatory discards of undersized GB cod. Furthermore, the circle hook requirement would allow undersized fish to have better survivability and easier escapement for other landed species caught incidentally.

In the past Hook Sector members have participated in collaborative research projects with the NEFSC and the Northeast Consortium. The Northeast Consortium was created in 1999 to encourage and fund effective, equal partnerships among commercial fishermen, scientists, and other stakeholders to engage in collaborative

research and monitoring projects in the Gulf of Maine and Georges Bank. The Hook Sector only uses hook-and-line gear which ensures that some amount of fish with smaller mouths, such as small flounders, are not caught in large numbers by Hook Sector members (Table 5.3). Members would have minimal impacts as effort, landings, and discards as they would be strictly controlled through additional measures (DAS input control and hard TAC of GB cod output control).

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool are also restricted to 12/0 circle hooks. However, vessels in the Common Pool utilize all gear types including anchor/gillnet, hook and longline, and bottom otter trawl, whereas the Hook Sector only uses hook-and-line gear. Compared to hook gear, fixed gear and otter trawls are known to have a greater impact on GB cod (Figure 5.7). Additional gear types leads to an increased interaction with a broader range of other landed species and benthic habitat. Furthermore, vessels in the Common Pool can switch gear types.

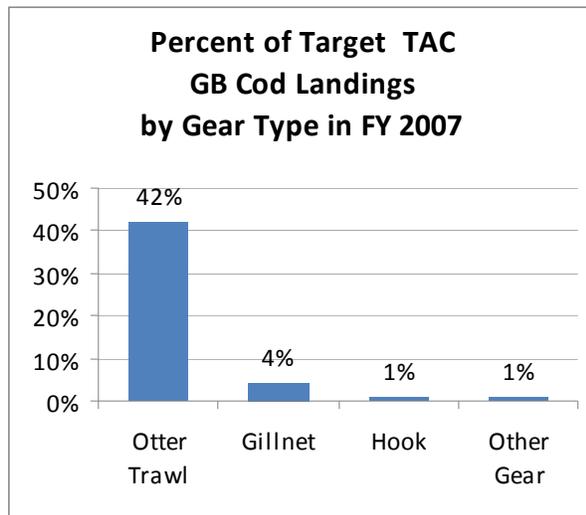


Figure 5.7. Percentage of Target TAC Georges Bank cod landings by gear type in FY 2007 (Data source: NMFS NEO).

Compared to the Common Pool, hook restrictions would result in a “positive” impact on GB cod and other landed species as it limits impacts from more efficient gear types on adult and undersized fish (Table 5.1).

9. **Georges Bank Seasonal Closures:** Under the Preferred Alternative, the Participating Vessels in the Hook Sector are seeking an exemption from the Seasonal Closure on Georges Bank (May 1 through May 31) exclusively when using hook gear to catch cod or other regulated species managed under the NE Multispecies FMP. During this exempted period, however, Participating Vessels would continue to comply with the Spawning Season Restrictions. The 20-day

spawning block (March-May) would remain in effect in accordance with NMFS regulations. In addition, Hook Sector members would still be required to take their 20-day spawning block out of the fishery during the months of March, April, or May to protect spawning fish and would continue to comply with spawning season restrictions.

Figure 5.8 shows the monthly GB cod landings by the Hook Sector from FY 2004 through FY 2007. In FY 2004, there were zero pounds of cod landings in May due to a delayed start in the fishing season. In May of FY 2005 the Hook Sector landed 42,052 lbs (19 mt) of GB cod or 15 percent of the total yearly GB cod landings. In May of FY 2006, the Hook Sector landed 22,662 lbs (10.3 mt) of GB cod or 13 percent of the total yearly GB cod landings. In May of FY 2007, the Hook Sector landed 76,073 lbs (34.5 mt) of GB cod or 49 percent of the total yearly landings. All landings during the month of May must be accounted for and subtracted from the Hook Sectors aggregate catch (TAC). The Hook Sector has never exceeded the monthly quota for May.

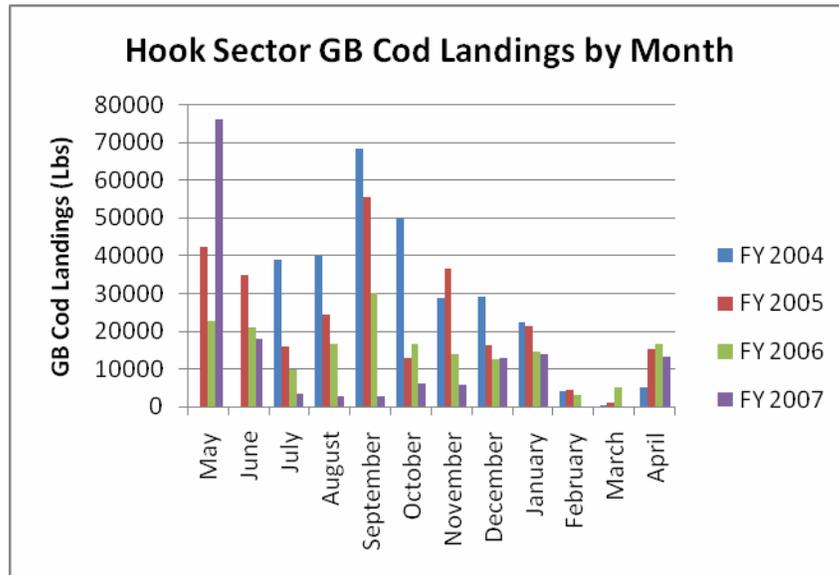


Figure 5.8 Hook Sector Georges Bank Cod Landings by Month from FY 2004 through FY 2007.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool must adhere to the GB Seasonal Closure.

Compared to the Common Pool, exemption from the GB Seasonal Closure by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector has a hard TAC output control, resulting in no net increase in harvested GB cod. (Table 5.1). A relatively small amount of other landed species is harvested during the closure as well, resulting in a “low negative” impact for these species.

- 10. Closed Areas:** Under both alternatives, Participating Vessels in the Hook Sector and the Common Pool fisheries may fish in Closed Areas to the extent authorized by NMFS.

In FY 2004, The CCCHFA submitted to the NMFS an EFP application for a directed experimental hook-and-line fishery in the northwestern section of GB CAI during the months of October through December. The EFP featured participant-funded observer coverage and real-time landings data monitoring. The EFP was constrained by a 15 mt cod bycatch TAC. The EFP closed when the TAC was reached. Participating Vessels demonstrated their ability to stay below the haddock TAC for the exempted fishery and caught 208,798.5 pounds out of the 220,460 pound TAC (94.7 percent). Seventy-six percent of the total catch was haddock, demonstrating that hook-and-line is an effective gear for targeting this species. Participating Vessels demonstrated their ability to stay below the cod bycatch TAC for the exempted fishery and caught 12,148.8 pounds out of the 33,069 pound cod bycatch TAC (36.7 percent). Very few juvenile haddock and cod were caught in the study area during the EFP, demonstrating that a hook-and-line fishery in the proposed area will be size selective for haddock and cod. On November 16, 2004, NMFS partially approved Framework 40A, which allowed only Sector vessels to participate in the SAP. The SAP features mandatory use of VMS, daily landings reporting, and gear restrictions (longline or tub trawl gear) and is limited to the months that are consistent with the EFP (October through December). The SAP is constrained by a 1,000 mt haddock TAC and is closed when the TAC is reached. There is no increase in mortality on the GB cod stock due to Sector participation in the SAP since cod bycatch by Sector vessels is derived from the Sector's allocation. This precaution assures that overfishing is managed on the GB cod stock as a result of the SAP. The results of the FY 2004 through FY 2007 SAP can be seen in Figure 5.9. In FY 2004, Participating Vessels demonstrated their ability to stay below the haddock TAC and caught less than 50 percent of their allocation. Additionally, cod bycatch was less than 2 percent of total haddock catch. Finally, the estimated landings and bycatch figures (developed by NMFS) differ by less than 1 percent from the recorded landings and bycatch data (collected by the Sector).

In FY 2005, Hook Sector members shifted their effort from cod onto haddock by participating in the CAI Haddock SAP from October 1 to November 15. Using bait that minimizes cod catch, 21 vessels made 270 trips into CAI to land 847,829 (385 mt) lbs of haddock while encountering only 18,913 lbs (8.6 mt) of cod (Figure 5.7).

In FY 2006, Hook Sector members shifted their effort from cod onto haddock by participating in the CAI Haddock SAP from October 1 to November 15. Using bait that minimizes cod catch, Hook Sector vessels made 58 trips into CAI to land 99,746 lbs (45 mt) of haddock while encountering only 4,885 lbs (2.2 mt) of cod (Figure 5.7). As mandated in Framework 40A, the Sector manager submitted daily catch reports to NMFS and facilitated additional observer coverage for the fleet, allowing for strict monitoring of catch and bycatch.

In FY 2007, Hook Sector members again shifted their effort from stocks of concern (cod) onto healthy stocks (haddock) by participating in CAI Haddock SAP from October 1 to November 15. Using bait that minimizes cod catch, Hook Sector vessels made 89 trips in the SAP to land 244,874 lbs (111 mt) haddock and 2,536 lbs (1.2 mt) cod. As mandated in Framework 40A, the Sector manager again submitted daily catch reports to NMFS and facilitated additional observer coverage for the fleet, allowing for strict monitoring of catch and bycatch.

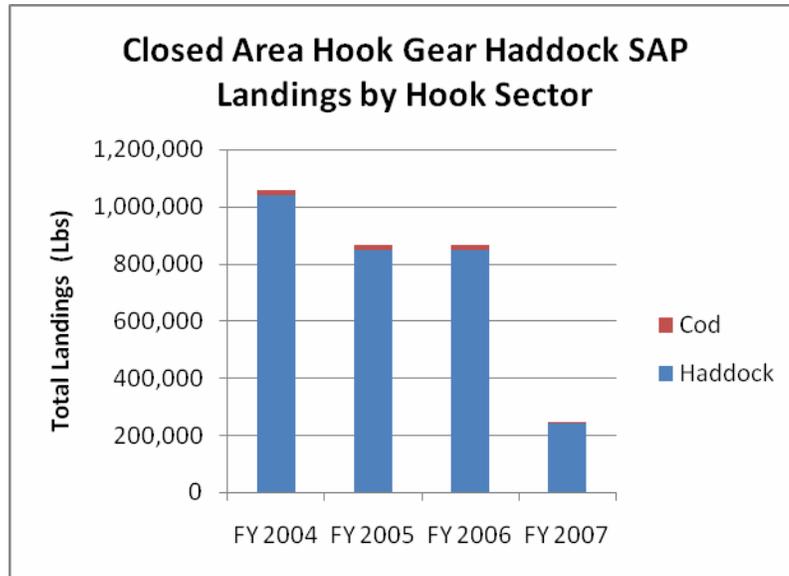


Figure 5.9. Closed Area Hook Gear Haddock SAP Haddock and Georges Bank Cod Landings by Hook Sector from FY 2004 through FY 2007.

Compared to the Common Pool, participation in the Hook Gear Haddock SAP by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector operates under a hard TAC output control for which all GB cod landings must be accounted. Though the Hook Sector operates under a TAC for haddock to ensure that overfishing is managed during the SAP, the harvest of haddock under this Harvest Rule results in a “low negative” impact for other landed species (Table 5.1). The CAI SAP is an example of the Sector adapting to the presence and absence of resources.

11. **Operating Area:** Under the Preferred Alternative, the Hook Sector would only fish in the GB Cod Hook Sector Operating Area (see Section 3.1.2). The operating area is a well-defined area, thereby allowing for a more-accurate qualification and quantification of impacts on GB cod and other landed species.

From FY 2004 through FY 2007, all trips by the Hook Sector were located within the Operating Area.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels in the Common Pool may operate in larger and less-defined geographical areas resulting in a poorer characterization of impacts to allocated and other landed species.

Compared to the Common Pool, operations in a well-defined and smaller area by the Fixed Gear Sector result in an overall “Low positive” impact on GB cod and other landed species due to more accurate qualification and quantification of landings. A better characterized set of impacts resulting from Sector operations facilitates better fishery management decision-making.

- 12. Gear restrictions:** Under the Preferred Alternative, Sector members and their Participating Vessels may not fish for GB cod or other species managed under the Plan with gear other than jigs, non-automated demersal longline, or handgear. Size 12/0 circle hooks, required by both the Hook Sector and the Common Pool, reduce the amount of undersized GB cod caught, thus reducing regulatory discards of undersized GB cod. Fish with smaller mouths, such as flounders, are not caught in large numbers by the Hook Sector. The circle hook requirement allows undersized fish to have better survivability and allows easier escape for other potentially landed species caught incidentally than the use of traditional hooks.

Under the Preferred Alternative, the Hook Sector seeks an exemption from the limits on the number of hooks that may be fished. Allowance for a larger number of hooks would maximize the efficiency of hook gear, allowing fishermen to capitalize on the abundance of GB cod, which vary seasonally. The increased daily hook limits would have minimal impacts as compared to other fishing efforts, landings, and discards, which are strictly controlled through other management measures, such as operating under a hard TAC of GB cod and DAS. Because an exemption from the 3,600-hook limit would allow for greater efficiency and less soak time, there would be less interaction with other landed species.

Since FY 2004 the Hook Sector has only utilized hook-and-line gear.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent FW adjustments to the FMP. Participating Vessels in the Common Pool are restricted to a 3,600 hook limit in the GB Regulated Mesh Area (RMA); there is a 2,000 hook limit in the GOM and SNE RMAs. Vessels in the Common Pool utilize all gear types including anchor/gillnet, hook and longline, and bottom otter trawl, whereas the Hook Sector only uses hook and longline gear. Many of the gear types used by the Common Pool fishery are much more efficient at catching GB cod and other landed species subject to the NE Multispecies FMP. For example, relative to fixed gear, otter trawls are known to have a greater GB Cod catch efficiency

Compared to the Common Pool fishery, the gear restrictions of the Hook sector would effectively ensure that Sector members pursue groundfish with only hook and longline gear. This would have a positive impact for GB cod and other landed species by using low-impact hook and longline gear (Table 5.1). An exemption from the 3,600 hook limit may result in increased interactions with non-target species. However, DAS and hard TAC are in place to control mortality of GB cod species. The hook exemption allows for more efficient catch of GB cod while minimally impacting many other landed species such as flounders.

- 13. Distribution and pooling of DAS:** Under the Preferred Alternative, at the beginning of the fishing year each participating vessel will be allocated DAS identical to the individual baseline established for the vessel by Amendment 13 and subsequently reduced by FW 42. At any time during the year, and subject to Board approval, a Hook Sector member may request the Manager to redistribute DAS among one or more Participating Vessels. The Manager shall notify NMFS within three calendar days of any such request approved by the Board. Vessel size restrictions (10 percent length, 20 percent horsepower) do not apply to the redistribution of DAS among Sector vessels. The maximum vessel characteristics are limited to the largest baseline of a Sector Permit. Internal Hook Sector redistribution will cease after March 1st of a given fishing year in order to provide for administrative action and time to fish the DAS. The redistribution exemption of DAS is consistent with the intent and stated benefits of Hook Sector TAC at the time of final approval of Amendment 13. This element enhances flexibility of membership with respect to their DAS allocations and allows Hook Sector to pursue scales of efficiency to offset resource depletion and increasing overhead costs. This would maximize the opportunity of Hook Sector members to harvest their TAC to their fullest potential while managing overfishing of the GB cod stock. Exemption from the 10/20 rule on leasing of DAS within the Hook Sector allows flexibility in redistributing DAS within the GB Hook Sector.

To date, fifteen DAS have been redistributed within the Hook Sector that would have otherwise been prohibited, thereby making fishing effort by the Hook Sector more efficient while at the same time, ensuring that overfishing was not occurring.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Vessel size restrictions (10 percent length and 20 percent horsepower) do apply in the Common Pool redistribution of DAS.

The Hook Sector's distribution and pooling of DAS would result in "negligible" impacts to allocated species and other landed species relative to the Common Pool fishery, resulting in no change to GB cod and other landed species fishing effort.

- 14. Observer notification requirements in the US/CA resource management area:** Under the Preferred Alternative, Hook Sector members are exempt from the

requirement to notify the observer program at least 72 hours prior to entering the Western US/Canada area, only while fishing on a Category A Days at Sea (DAS) allocation. Members wishing to fish in the Category B regular DAS allocation are still required to notify NMFS 72 hours in advance. All other requirements (reporting, VMS) are maintained. Members electing to enter the Eastern US/CA area are still obligated to comply with the observer notification requirements. The traditional fishery would operate unencumbered by a requirement designed to monitor the catch of GB yellowtail flounder.

From FY 2004 through FY 2007, the Hook Sector has only landed 132 lbs of yellowtail flounder which indicates a lack of intent/ability to catch this species (Table 5.3). Hook Sector fishermen utilized this exemption on approximately 65 trips since it was granted in November 2006 through mid-2007.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. Participating Vessels, including A DAS, are required to notify the observer program at least 72 hours prior to entering the Western US/CA area.

Compared to the Common Pool fisheries, the exemption from the observer notification requirements in the US/Canada resource management area would result in “negligible” impacts to allocated species and other landed species, since this Harvest Rule would neither increase nor decrease catch.

15. **Additional DAS management measures:** Under the Preferred Alternative, Participating Vessels are not subject to the differential DAS counting requirement implemented through temporary action or Framework 42.

Approximately 40 percent of Hook Sector trips in 2006 were taken within the 2:1 counting area. In FY 2007 approximately 15 percent of the Hook Sector trips were taken in the 2:1 counting area.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent framework actions. Participating Vessels, including A DAS, are subject to the differential DAS counting requirement.

Compared to the Common Pool fisheries, the exemption from the differential DAS counting requirement would result in “negligible” impacts to allocated species and other landed species since this Harvest Rule will neither increase nor decrease catch of allocated or other landed species (Table 5.1).

16. **Prorating of DAS and landings:** Under both alternatives, the prorating of DAS and landings would allow the Hook Sector to commence operation on May 1, 2009, even if final approval of the Hook Sector’s Operations Plan occurs after May 1,

2009. However, all GB cod caught by the Hook Sector would be accounted for and deducted from the Hook Sector's aggregate allocation of GB cod. Accordingly, this Harvest Rule establishes that the allocation of GB cod is debited whether the allocated species is harvested before or after the final approval of the Operations Plan and commencement of Sector operations for FY 2009. Similarly, DAS are prorated if used prior to final approval of the Operations Plan for FY 2009.

The prorating of DAS and landings would result in an overall "negligible" impact on GB cod and other landed species since the allocation for GB cod and DAS are maintained and conserved (i.e., catch and DAS are neither increased nor decreased under this Harvest Rule).

Summary of Impacts: Direct and indirect impacts on GB cod and other landed species conclusion: The FY 2009 Hook Sector direct and indirect impacts on GB cod and other landed species is expected to be "positive" overall compared to the Common Pool fishery (Table 5.1) for the following reasons:

- **Aggregate Sector Allocation:** Compared to the Common Pool, the Hook Sector would operate under an aggregate sector allocation (i.e., TAC), resulting in an overall positive impact for the GB cod stocks and other landed species because the TAC helps to manage overfishing by the Hook Sector. In each of the years past, the Hook Sector members have caught less than 35 percent of their TAC, which has ranged from 8 to 11 percent of the overall GB cod TAC. The Hook Sector has also participated in an EFP and SAP and demonstrated their ability to stay below the haddock TAC and cod bycatch TAC.
- **Monthly and Weekly Quota Targets:** Monthly and weekly quota targets spread out the allocated GB cod catch evenly throughout the FY and help to ensure that the Hook Sector generally does not harvest their allocation in an overly intensive fashion to the detriment of the GB cod stock or to spawning aggregations. However, these monthly and weekly quota Harvest Rules have a negligible impact on allocated and other landed species due to 1) the rarity of quota exceedences, 2) the ability of the Sector manager to redistribute monthly quota when quota exceedences occur, 3) the low magnitude of catch relative to the Common Pool fishery, and 4) the fact that weekly quota targets have never been exceeded (and likely will not in the future).
- **DAS Allocation:** The DAS allocation results in an overall "low positive" impact for the GB cod stocks and other landed species as the DAS and the hard TAC work as complementary input and output controls that manage overfishing of GB cod by the Hook Sector.
- **Sector Call-in:** Compared to the Common Pool, increased monitoring efforts of the Hook Sector would result in a "low positive" impact on GB cod and other landed species as accuracy and timeliness of catch data would be improved and prevent

(potential) overharvest of the sector's TAC. Timely access to accurate catch data facilitates good fishery oversight and management.

- **DAS Transfer/Lease:** Compared to the Common Pool, the leasing exemption by the Hook Sector would have a “negligible” incremental impact on allocated species and other landed species since fishing effort is neither increased nor decreased; rather, it is simply redistributed within the Sector.
- **Full Retention of Legal-Sized Cod:** Compared to the Common Pool, the full retention of GB cod by the Hook Sector would result in a “positive” impact on GB cod as it would count GB cod against TAC and would dramatically reduce ecologically and economically inefficient discard scenarios.
- **Species trip limits:** The exemption from the species trip limit would result in a “positive” impact on GB cod since cod are not discarded when more than 1,000 lbs are landed and are efficiently counted towards the TAC without wasteful discarding. Trip limits in this Harvest Rule for winter flounder and yellowtail are more restrictive, hence, environmentally protective than the Common Pool fishery. Therefore, these more protective trip limits for winter flounder and yellowtail result in a “positive” impact to these species. For white hake and other landed species under the NE Multispecies FMP not explicitly called out in the Harvest Rule, this Harvest Rule would yield a “negligible” impact on these other landed species as the Hook Sector operates under Common Pool fishery rules.
- **Hook size:** Hook restrictions would result in a “positive” impact on GB cod and other landed species as it limits impacts from more efficient gear types on adult and undersized fish.
- **GB Seasonal Closure/Spawning Season restrictions:** Exemption from the GB Seasonal Closure by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector has a hard TAC output control, resulting in no net increase in harvested GB cod. While additional hook lines may have some adverse effect on spawning aggregations through disturbance of mating behavior, it is unclear to what degree hook gear impacts spawning populations. Relatively small amounts of other landed species are harvested during the closure as well, resulting in a “low negative” impact for these species.
- **Closed Areas:** Participation in the Hook Gear Haddock SAP by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector operates under a hard TAC output control for which all GB cod landings must be accounted. Though the Hook Sector operates under a TAC for haddock to ensure that overfishing is managed during the SAP, the harvest of haddock under this Harvest Rule results in a low negative impact for other landed species.
- **Operating Area:** Operations in a well-defined and smaller area by the Fixed Gear Sector result in an overall “Low positive” impact on GB cod and other landed

species due to more accurate qualification and quantification of landings. A better characterized set of impacts resulting from Sector operations facilitates better fishery management decision-making.

- Gear restrictions: Gear restrictions of the Hook sector would effectively ensure that Sector members pursue groundfish with only hook and longline gear. This would have a positive impact for GB cod and other landed species by using low-impact hook and longline gear. An exemption from the 3,600 hook limit may result in increased interactions with non-target species. However, DAS and a hard TAC are in place to control mortality of GB cod species. The hook exemption allows for more efficient catch of GB cod, while minimally impacting many other landed species such as flounders.
- Distribution and pooling of DAS: Distribution and pooling of DAS would result in “negligible” impacts to allocated species and other landed species relative to the Common Pool fishery, resulting in no change to GB cod and other landed species fishing effort.
- Observer notification requirements in the US/Canada Resource Management Areas: Exemption from the observer notification requirements in the US/Canada resource management area would result in “negligible” impacts to allocated species and other landed species, since this Harvest Rule would neither increase nor decrease catch.
- Additional DAS management measures: Exemption from the differential DAS counting requirement would result in “negligible” impacts to allocated species and other landed species since this Harvest Rule with neither increase nor decrease catch of allocated or other landed species.
- Prorating of DAS and landings: Prorating of DAS and landings would result in an overall “negligible” impact on GB cod and other landed species since the allocation for GB cod and DAS are maintained and conserved (i.e., catch and DAS are neither increased nor decreased under this Harvest Rule).

5.1.1.3 Bycatch and Discards

Under the Preferred Alternative, the FY 2009 Hook Sector operates under a hard TAC for GB cod, and once the hard TAC is caught each year, the Fixed Gear Sector members stop fishing with gear capable of catching GB cod. DAS allocations set an absolute maximum on the amount of effort the Hook Sector can expend in attempting to catch the Hook Sector allocation of GB cod each year. DAS usage ensures that the effort of the Hook Sector would be similar to the effort of the Common Pool hook fishermen during the qualifying period and puts a cap on the effort that Hook Sector members can put into the fishery. This sets a corollary maximum on expected bycatch. Elimination of the daily trip limit for GB cod in favor of a hard TAC allows vessels to operate more efficiently, and to reduce impacts on bycatch and discard species, resulting in less discards. The Common

Pool vessels are limited to landing 1,000 lbs of GB cod per day; thus, they may continue fishing while discarding any additional GB cod that exceeds this daily limit.

Hook Sector members would be employing gear that has been used for decades to catch GB cod. The exemption from hook limits would have minimal impacts because this increased effort, landings, and discards are strictly controlled through other management measures, such as operating under a hard TAC of GB cod and DAS. An exemption from the hook limits may result in increased interactions with other landed species, but this may be counterbalanced by increased efficiency if it results in gear being deployed in the water for a shorter amount of time. By restricting themselves to a well-defined area, the Fixed Gear Sector allows for a more accurate qualification and quantification of impacts on bycatch and discard species.

Days at Sea (DAS) input controls are still in place to control mortality of non-GB cod species. Redistribution of DAS is consistent with the intent and stated benefits of Hook Sector Allocation at the time of final approval of Amendment 13. This element enhances flexibility of membership with respect to their DAS allocations and allows the Hook Sector to pursue scales of efficiency to offset resource depletion and increasing overhead. This would maximize the opportunity of Hook Sector members to harvest their TAC to their fullest potential while not contributing to overfishing of the GB cod stock. Exemption from the 10/20 rule on leasing of DAS within the Hook Sector is also consistent with the stated benefits of the GB Hook Sector. Exemption from the observer requirement to enter Western US/Canada allows the Hook Sector to operate unencumbered by a requirement designed to monitor the catch of GB yellowtail flounder. Exemption from additional measures designed to protect Species of Concern (SOC; i.e., yellowtail flounder, winter flounder, white hake) such as differential counting of DAS would allow the Hook Sector to pursue its allocation of GB cod in traditional fishing areas.

Table 5.5 summarizes total landings and discards by Hook Sector members in FY 2006 and FY 2007 as recorded by the Sector Manager in the Hook Sector database. Since FY 2006, the Hook Sector has seen a substantial decrease in landings and discards for almost all species. In FY 2006, discards were predominantly spiny dogfish shark with 479,280 lbs (89.6 percent of all discards), followed by haddock (5.5 percent) and cod (3.3 percent). All other species accounted for less than 1.6 percent of the total fish discarded. The cod and haddock discards were primarily due to predation (dogfish, seals, slime eels) or legal size limits.

FY 2007, the discards were predominantly spiny dogfish (308,244 lbs, or 91.56 percent of all discards), followed by haddock (6.09 percent), and cod (2.02 percent). Again, cod and haddock discards were primarily due to predation (dogfish, seals, slime eels) or size limits. All other species accounted for less than 1 percent of the total fish discarded.

Table 5.5. Hook Sector Landings and Discards for All Species in FY 2006 and FY 2007.

	FY 2006	FY 2007
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Species	Dealer Landings	Reported Discards	Dealer Landings	Reported Discards
Haddock	258,544	29,650	299,126	20,515
Cod	179,616	17,518	155,453	7,463
Cusk	2,645	547	8,034	286
White hake	9,416	609	2,934	97
Redfish	2,559	13	2,818	14
Skate wings	6,604	6,954	2,244	5
Pollock	15,455	280	2,021	36
Winter flounder/blackbacks	1,435	21	1,529	9
Cunner	662	0	1,395	0
Bluefish	568	20	1,099	0
Catfish/wolfish	4,444	14	1,032	1
Spiny dogfish shark	52,027	479,280	600	308,244
Scup	0	0	264	0
Monkfish tails	526	23	179	0
Monkfish	906	1	62	0
Yellowtail flounder	32	1	27	0
Halibut	292	10	22	0
Whiting	0	1	3	0
American plaice/dabs	7	0	1	0
Mackerel	554	0	0	0
American lobster	10	0	0	0
Barndoor skate	0	10	0	0
Ling	0	0	0	0
Witch flounder	0	0	0	0

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. The Hook Sector would not receive an allocation of GB cod. As indicated by the historical Hook Sector GB cod landings data (Figure 5.1), these interactions are relatively minor as compared to the total GB cod landings, for example, in FY 2007 (Figure 5.4). Without a GB cod allocation to contain fishing effort, other Common Pool fishery gear, which have higher catch efficiency (e.g., trawl), have more opportunity for increased interactions and incidental bycatch and discard species. Compared to the Hook Sector; these gear types are known to increase interactions with a broader range of species and create the potential for negative interactions with bycatch and discard species.

Summary of Impacts: Direct and indirect impacts on bycatch and discard species conclusion: The FY 2009 Hook Sector direct and indirect impacts on bycatch and discard species is expected to be “positive” compared to the Common Pool fishery (Table 5.1) for the following reasons:

- Aggregate Sector allocation: The TAC ensures that only a fixed amount of fishing occurs, thereby limiting interaction with bycatch and discard species, resulting in a positive impact to bycatch and discards.
- Monthly and weekly quota targets: Quota targets have a negligible effect on discards due to 1) inefficient fishing methods resulting in rarely reaching monthly quotas, 2) the Hard TAC and 3) the ability of the sector manager to redistribute the

catch quota. Monthly and weekly quotas have no material affect on bycatch; therefore, quotas have a negligible impact on bycatch. Weekly quotas have never been used by the Sector due to historical non-achievement of the TAC.

- Days-at-Sea (DAS): DAS allocations set an absolute maximum on the amount of effort the Hook Sector can expend each year, limiting bycatch and discards by the Hook Sector and resulting in a “low positive” impact.
- Sector call-in: Compared to the Common Pool, increased monitoring efforts of the Hook Sector would result in a “low positive” impact on bycatch and discards as accuracy and timeliness of catch data would be improved and prevent (potential) overharvest of the sector’s TAC. Timely access to accurate catch data facilitates good fishery oversight and management.
- DAS transfer/lease: The leasing exemption by the Hook Sector would have a “negligible” incremental impact on bycatch and discards since fishing effort is neither increased nor decreased; rather, it is simply redistributed within the Sector.
- Full retention of legal-size cod: Full retention of GB cod by the Hook Sector would result in a “positive” impact on GB cod as it would count GB cod against the Sector’s TAC and would dramatically reduce ecologically and economically inefficient discard and bycatch scenarios.
- Species Trip Limits: The exemption from the species trip limit would result in a “positive” impact on bycatch and discards since cod are not discarded when more than 1,000 lbs are landed and are efficiently counted towards the TAC without wasteful discarding. Trip limits in this Harvest Rule for winter flounder and yellowtail are more restrictive, hence, environmentally protective than the Common Pool fishery. Therefore, these more protective trip limits for winter flounder and yellowtail result in a positive impact to these species. For white hake and other landed species under the NE Multispecies FMP not explicitly called out in the Harvest Rule, this Harvest Rule would yield a “negligible” impact on these other landed species as the Hook Sector operates under Common Pool fishery rules.
- Hook Size: Hook restrictions would result in a “positive” impact on GB cod and other landed species as it limits impacts (bycatch) from more efficient gear types on adult and undersized fish.
- GB Seasonal Closure/Spawning Season restrictions: Exemption from the GB Seasonal Closure by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector has a hard TAC output control, resulting in no net increase in harvested GB cod bycatch. Relatively small amounts of other landed species are harvested during the closure as well, resulting in a potential “low negative” impact (bycatch) for these species.
- Closed Areas: Participation in the Hook Gear Haddock SAP by the Hook Sector would result in a negligible impact on GB cod as the Hook Sector operates under a

hard TAC output control for which all GB cod landings must be accounted (i.e., no additional discards or bycatch). Though the Hook Sector operates under a TAC for haddock to ensure that overfishing is managed during the SAP, the incremental increase in catch of additional bycatch and discards under this Harvest Rule results in a “low negative” impact for other landed species.

- Operating Area: Operations in a well-defined and smaller area by the Hook Sector result in an overall “low positive” impact on GB cod and other landed species due to more accurate qualification and quantification of discards and bycatch. A better characterized set of bycatch and discard impacts resulting from Sector operations facilitates better fishery management decision-making.
- Gear restrictions: Gear restrictions of the Hook Sector would effectively ensure that Sector members pursue groundfish with only hook and longline gear. This would have a positive impact for GB cod and other landed species by using low-impact hook and longline gear, reducing bycatch and discards relative to the Common Pool fishery with more efficient fishing effort gear. An exemption from the 3,600 hook limit may result in increased interactions with bycatch and discards. However, DAS and hard TAC are in place to control bycatch and discards. The hook exemption allows for more efficient catch of GB cod, while minimally impacting many other landed species such as flounders.
- Distribution and pooling of DAS: Distribution and pooling of DAS would result in “negligible” impacts to discards and bycatch relative to the Common Pool fishery, since this Harvest Rule would neither increase nor decrease fishing effort.
- Observer notification requirements in the US/Canada Resource Management Areas: Exemption from the observer notification requirements in the US/Canada Resource Management Area would result in “negligible” impacts to discards and bycatch, since this Harvest Rule would neither increase nor decrease fishing effort.
- Additional DAS management measures: Exemption from the differential DAS counting requirement would result in “negligible” impacts to discards and bycatch since fishing effort is neither increased nor decreased under this Harvest Rule).
- Prorating of DAS and landings: Prorating of DAS and landings would result in an overall “negligible” impact on discards and bycatch since fishing effort is neither increased nor decreased under this Harvest Rule).

5.1.1.4 Protected Resources

Under the Preferred Alternative, the FY 2009 Hook Sector would be employing hook-and-line gear in the same areas they have been fishing for decades, so the effect on protected resources in that area would likely be similar to the minimal impacts observed in the past. The Hook Sector would have 24 vessels in FY 2009 compared to the 58 vessels in FY 2004. Further actions to reduce the likelihood of interactions between the gear types governed by this FMP and the protected resources that inhabit the Hook Sector

Operating Area would be considered if deemed necessary. Relative to the No Action Alternative, the Preferred Alternative is anticipated to have a positive impact on protected resources when compared to protected resource impacts under the No Action Alternative.

Commercial fisheries are categorized by the frequency of incidental mortality and injury caused by gear interaction. Table 5.6 provides an explanation of the classifications used in the 2008 List of Fisheries (LOF) at 50 CFR Part 229. The Northeast/mid-Atlantic bottom longline/hook-and-line fishery is listed as a Category III fishery under 50 CFR Part 229. This fishery would continue to operate within the mandated level of observer coverage. Entanglements are assumed to occur with increased frequency in areas where more gear is set and in areas with higher concentrations of protected species. The Hook Sector would continue to operate in areas and use traditional gear types.

Although, interactions between protected species and hook gear would vary over time and space, interactions generally include getting caught on hooks and longline gear, entanglement in groundline, entanglement in anchor line, or entanglement in vertical lines that connect the gear to the surface. Interactions occur when fishing gear overlaps both spatially and trophically with a species' niche. Spatial interactions are more "passive" and involve unintentional interactions with fishing gear. Trophic interactions are more "active" and occur when protected species attempt to consume prey caught in fishing gear and become entangled in the process. When fishing gear is catching fish that protected species prey on, the protected species may interact with the fishing gear as they attempt to consume the fish. Both spatial and trophic interactions occur with hook-and-line gear. Table 4.12 lists protected species in the region of the Hook Sector operations.

Table 5.6. Explanation of the Classifications Used in the 2008 List of Fishery (LOF) at 50 CFR Part 229.

Fishery Category	Explanations
I	A commercial fishery determined by the Assistant Administrator to have frequent incidental mortality and serious injury of marine mammals. A commercial fishery that frequently causes mortality or serious injury of marine mammals is one that is by itself responsible for the annual removal of 50% or more of any stock's potential biological removal (PBR) level.
II	A commercial fishery determined by the Assistant Administrator to have occasional incidental mortality and serious injury of marine mammals. A commercial fishery that occasionally causes mortality or serious injury of marine mammals is one that, collectively with other fisheries, is responsible for the annual removal of more than 10% of any marine mammal stock's PBR level and that is by itself responsible for the annual removal of between 1 and 50%, exclusive of any stock's PBR.
III	A commercial fishery determined by the Assistant Administrator to have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. A commercial fishery that has a

Table 5.6. Explanation of the Classifications Used in the 2008 List of Fishery (LOF) at 50 CFR Part 229.

Fishery Category	Explanations
	<p>remote likelihood of causing incidental mortality and serious injury of marine mammals is one that collectively with other fisheries is responsible for the annual removal of:</p> <p>(1) Less than 50% of any marine mammal stock's Potential Biological Removal (PBR) level, or</p> <p>(2) More than 1% of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1% or less of that stock's potential biological removal 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. (50 CFR 229.2)</p>

In FY 2004 through FY 2006 the Hook Sector had no documented takes on marine mammals or other protected species. Table 5.7 shows the observed incidental takes by the Hook Sector for FY 2007, in which one herring gull and one greater shearwater was taken. According to the Northeast Fisheries Observer Program, preliminary data for FY 2008 shows no incidental takes for the GB Cod Hook Sector (CCCCFHA personal communication 2008). For FY 2009 Hook Sector members would be employing gear in the same areas they have been fishing for centuries, so the effect on protected species in that area would be likely to be similar to what they've been in the past.

Table 5.7. Observed Incidental Takes in the Hook Sector: May 2007 to April 2008.

Species	Condition	No. of Animals	Gear	Area
Herring Gull	Dead, fresh	1	Longline	Inside Haddock Hook SAP
Greater Shearwater	Dead, fresh	1	Longline	Inside Haddock Hook SAP

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. The Hook Sector would not receive an allocation of GB cod. Without the combination of a GB cod allocation, 100 percent GB cod retention requirement, and GB cod landing limit exemptions to efficiently contain fishing effort, increased use of gillnets and trawls would result in increased interactions with protected resources.

The Common Pool fishery includes use of all gear types and the flexibility to switch gear types (as opposed to Sector vessels that must use dedicated fixed gear under the Preferred Alternative). Because of the allowed and continued use of all Common Pool fishery gear types, the No Action Alternative would increase the potential for interaction with protected resources when compared to the Preferred Alternative. Specifically, the Common Pool adds trawl gear that the Sector cannot use. Trawl gear and gillnet gear fall under a Category II fishery category (Table 5.6), resulting in incidental mortality and serious injury of protected resources. Correspondingly, the Common Pool and Fixed Gear Sector uses gillnets, which are a Category I fishery (i.e., a commercial fishery determined by the Assistant Administrator to have frequent incidental mortality and serious injury of marine mammals.; Table 5.6). Thus, gillnet gear used by the Common Pool fishery and Fixed Gear Sector is anticipated to yield more injuries to protected resources relative to hook and longline gear used in the Hook Sector.

Northeast sink gillnets and bottom otter trawls are known to have more interactions with marine mammals than bottom longline gear (Table 5.8). Under the No Action Alternative, and in the absence of the Hook Sector, it is expected that these overall totals would not change substantially, but may increase since additional vessels from the rejected Hook Sector may be fishing with non-hook gear. Interactions that may occur would most likely be consistent with species known to interact with sink gillnet gear.

Table 5.8. Marine Mammals Known to Have Had Interactions with Sink Gillnets Otter Trawls, and Bottom Longlines on Georges Bank.

Fishery Description		Estimated Number of Vessels/ Persons	Marine mammal species and stocks incidentally killed/injured	Summary of Impacts: Direct and indirect impacts on protected resources conclusion: The FY 2009 Hook Sector direct and indirect impacts on protected species is expected to be
Category I Fishery	Northeast sink gillnet	341	Bottlenose dolphin, Western North Atlantic (WNA) offshore Common dolphin, Western North Atlantic Fin whale, Western North Atlantic Gray seal, Western North Atlantic Harbor porpoise, Gulf of Maine/Bay of Fundy (GME/BF) Harbor seal, Western North Atlantic Harp seal, Western North Atlantic Hooded seal, Western North Atlantic Humpback whale, Gulf of Maine Minke whale, Canadian east coast North Atlantic right whale, Western North Atlantic Risso's dolphin	
Category II Fishery	Northeast bottom trawl	1,052	Common dolphin, Western North Atlantic Harbor porpoise, Gulf of Maine/Bay of Fundy Harp seal, Western North Atlantic Long-finned pilot whale, Western North Atlantic Short-finned pilot whale, Western North Atlantic White-sided dolphin, Western North Atlantic	
Category III Fishery	Northeast /Mid-Atlantic bottom longline/ hook-and-line	46	None documented	

“positive” compared to the Common Pool fishery (Table 5.1) for the following reasons:

- The Aggregate sector allocation (Georges Bank cod Total Allowable Catch): The TAC and DAS ensures that only a fixed amount of fishing occurs, thereby limiting interaction with protected resources, resulting in a positive impact for this Harvest Rule on protected resources.
- Monthly and weekly quota targets: Quota targets have a negligible impact on protected resources due to the ability of the sector manager to redistribute the catch quota.
- Days-at-Sea: The DAS ensures that only a fixed amount of fishing occurs, thereby limiting interaction with protected resources, resulting in a positive impact for this Harvest Rule on protected resources.

- Sector call-in: Operations occur in a well-defined area; by mandating daily communication with the Manager, the Hook Sector would be able to monitor its interactions with protected species in a large area and in near-real time. Specifically, where endangered species are spotted in the operations area, the sector manager can communicate these occurrences to affect changes in member fishing actions, thereby managing interactions with protected resources. Therefore, this sector call-in Harvest Rule will result in a “positive” impact on protected resources.
- Days-at-Sea transfer/lease: Since there is no net change in fishing effort resulting from this Harvest Rule, this exemption has a “negligible” effect on protected resources.
- Full retention of legal size cod: Cod retention practices by Sector members suggested by this Harvest Rule has no effect on protected resources. Therefore, this Harvest Rule has a “negligible” effect on protected resources.
- Species trip limits: Sector members operate under a TAC that has not been historically achieved. Therefore, fishing effort would continue unimpeded; functionally comparable to the Common Pool fishery with respects to fishing interaction with protected resources. This Harvest Rule would result in “negligible” impact on protected resources.
- Hook size: Hook gear restrictions mandate a size 12/0 circle hook, allowing better survivability prospects for protected species. This results in a “low positive” impact on protected resources.
- Georges Bank Seasonal Closure/Spawning Season restrictions: This exemption would expand the area and timing of hook gear interactions with protected resources. However, only hook gear may be used, limiting the nature and extent of interactions with protected resources. Therefore, this exemption has a “low negative” effect on protected resources.
- Closed Areas: This exemption would expand the area and timing of hook gear interactions with protected resources with the SAP. However, only hook gear may be used, limiting the nature and extent of interactions with protected resources. Therefore, this exemption has a “low negative” effect on protected resources.
- Operating Area: Operations occur in the well-defined Operating Area; by mandating daily communication with the Manager, the Fixed Gear Sector would be able to monitor its interactions with protected species in the Operating Area and in near-real time. Specifically, where protected resources are spotted in the Operating Area, the sector manager can communicate these occurrences to affect changes in member fishing actions, thereby managing interactions with protected resources. Therefore, this sector call-in Harvest Rule will result in “low positive” effect on protected resources.

- Gear restrictions (exemption): An exemption from the hook limit may result in an increased amount of hook gear used (therefore, potentially increasing interaction with protected resources); however, impacts on protected species would be minimal as hook gear is known for minimal interactions relative to the Common Pool fishery gear such as trawls. In addition, hook gear restrictions mandate a size 12/0 circle hook allowing better survivability prospects for protected species. Therefore, the use of hook gear and removal of the hook limit has a positive impact on protected resources since hook gear yield result in low impacts to protected resources.
- Distribution and pooling of DAS: This Harvest Rule results in no net increase, nor decrease, in fixed gear and protected resource interactions. Accordingly, there is a negligible impact of this Harvest Rule on protected resources.
- Observer notification requirements in the US/Canada Resource Management Area: This Harvest Rule results in no net increase, nor decrease, in fixed gear and protected resource interactions. Accordingly, there is a “negligible” impact of this Harvest Rule on protected resources.
- Additional DAS management measures: This Harvest Rule results in no net increase, nor decrease, in fixed gear and protected resource interactions. Accordingly, there is a “negligible” impact of this Harvest Rule on protected resources.
- Prorating of Days-at Sea and Landings: This Harvest Rule results in no net increase, nor decrease, in fixed gear and protected resource interactions. Accordingly, there is a “negligible” impact of this Harvest Rule on protected resources.

5.1.1.5 Human Communities

The Hook 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 GB cod. By making collective decisions, Hook Sector members have fostered an interconnectedness amongst fishermen that has allowed them to become more efficient while continuing to protect the fabric of the traditional fishing community. This efficiency has materialized itself economically and socially, as Hook Sector fishermen are able to retain a profit margin that they can live on, are promoting accountable management to the region, and are maintaining their traditional fishing community in the presence of increasing tourism and local cost-of-living increases.

Under the Preferred Alternative, the FY 2009 Hook Sector would provide social and economic benefits to the Hook Sector members as well as to the Chatham/Harwichport, MA communities. Chatham/Harwichport, MA is more than 71 percent revenue dependent on groundfish stocks, particularly the GB cod stock Amendment 13 FSEIS (NEFMC 2004). Figure 5.10 shows the total revenue earned all groundfish sold in the Ports of Chatham/Harwichport, MA during 2001 through 2004 (NMFS Dealer Data Base) the period of time for which this study was conducted. Implementing the FY 2009 Operations Plan allows fishermen at the local level to make decisions that impact the

Hook Sector members and the larger Chatham/Harwichport community. By making collective decisions, Hook Sector members would foster interconnectedness among fishermen, facilitating efficiency while protecting the historical value of the traditional fishing community.

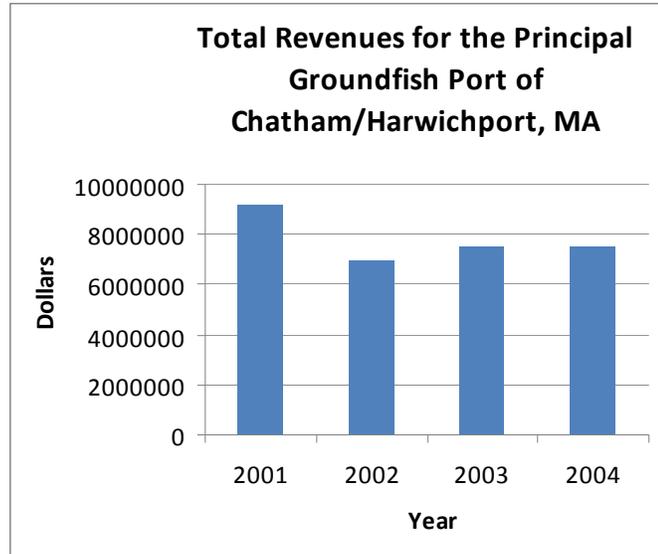


Figure 5.10. Total Revenues (1999 Dollars) for the Principal Groundfish Port of Chatham/Harwichport (Source: NMFS dealer, permit databases).

The Operations Plan would allow for a range of management measures that would make the Hook Sector economically viable for both longliners and jiggers. Having a mix of longliners and jiggers in the Hook Sector would maximize cooperation between the two groups. Since hook fishing is labor intensive, the Hook Sector would help ensure that shoreside jobs such as baiting remain viable opportunities in Chatham/Harwichport. Other shoreside jobs that directly and materially benefit from the Fixed Gear Sector include businesses such as gear suppliers, fuel, marine equipment, fish markets, and restaurants. Economic benefits afforded by the Fixed Gear Sector trickle throughout the community.

Input controls, such as reduced GB cod trip limits, Rolling Closures, and the GB Seasonal Closure in May, have a substantial impact on the Chatham/Harwichport community. During the social impact informational meeting held in Chatham, MA, in 2007, Chatham and Harwichport fishermen reported that they have experienced the most substantial social impacts from the May closure on GB to protect cod. The majority of multispecies vessels from Chatham/Harwichport fish for GB cod and not Gulf of Maine (GOM) cod. Management measures likely to impact this community group the most are those that modify or add nearshore area closures on GB and those that modify the GB cod trip limit (NEFMC, AM 13 FSEIS, Sec 5.6.1.3).

Hook fishermen and the Chatham and Harwichport area are dependent on GB cod. Past studies have shown this dependency to be substantial (71 percent revenue-dependence on

GB cod). Because of this, distributional impacts of fishery management are most severely felt in Chatham/Harwichport and amongst hook fishermen when the catch of GB cod is restricted. By implementing the Operations Plan and allowing the benefits of community-based management, these negative distributional impacts would be lessened or mitigated.

The Operations Plan allows a range of management measures that would make the Hook Sector economically viable for hook-and-line fishermen. By allowing fishermen to take part in localized decision-making, fishermen would maximize their opportunity to make safety conscious decisions and potentially save lives. This community-based management also allows for rapid response to changing developments on the ocean. Measures such as the monthly quota and DAS usage pulse the fishery so it does not concentrate in times of questionable weather. Having the flexibility of the DAS transfer/lease stipulation would lead to cooperative fishing, allowing older vessels to stay at shore, as necessary, and fishermen to work together for a safer working environment. This avoids 1) older vessel usage during inclement weather; and 2) racing to fish in unsafe conditions. Approval of the Operations Plan would have major safety benefits and a positive social impact for both the Hook Sector and Chatham/Harwichport area when compared to what may occur under the No Action alternative.

Approval of the Operations Plan and allocation of GB cod would allow Hook Sector members the flexibility to implement management measures that promote efficient methods of harvesting the GB cod resource with hook gear. This would allow Hook Sector members to remain economically viable while adjusting to changing economic and fishing conditions. By allowing the Hook Sector to create its own input controls while staying within a hard TAC, Hook Sector members would be able to realize higher economic returns on their investment in the groundfishery. This is crucial, given that the FW 42 FSEIS anticipated 6.5 percent decrease in total revenue for the port of Chatham as a result of the action.

The ability to form and operate a Hook Sector is an important component of providing flexibility to small commercial fishing entities to mitigate the socio-economic impacts of the Amendment 13 and subsequent actions. Further, the geographic location of the membership of this Hook Sector provides an opportunity for their fishing communities to reduce localized economic impacts. The Hook Sector Operations Plan allows flexibility to develop the fishery efficiently and offset economic impacts that result from fishing restrictions required to rebuild groundfish stocks.

With the increasing costs of fuel and overhead, small boat hook fishermen are limited in their ability to make extended trips to sea as the larger vessels do. They therefore must capitalize on their financial opportunities during the relatively short intervals they are at sea. By fishing under a hard TAC rather than an inefficient daily trip limit, Hook Sector members are maximizing their profitability while minimizing their business expenditures.

These benefits have been very evident in the five years of Hook Sector operation. The socio-economic benefits gained by the Hook Sector have convinced the GB cod Fixed Gear fishermen to establish and maintain their own sector. Furthermore, the NEFMC

continues to receive applications for Sector management while developing Amendment 16 (which includes the concept of Sector management). It is evident that Sectors are gaining a stronger foothold in the region, and can be partially attributed to the socio-economic success of the Hook Sector.

Several specific elements of the Operations Plan have socio-economic impacts on the Hook Sector and the Ports of Chatham and Harwichport. The hard TAC sets the absolute maximum poundage of GB cod that the Hook Sector can land each year which sets an approximate amount of revenue a fisherman or a fishing community can expect for the year. Although there are times of the year when Hook Sector members would not be fishing, they would have the security of knowing their Sector has an allocation that is consistent with the rebuilding plan for GB cod. This allocation allows individuals, businesses, and communities to prepare business plans and fishing plans, providing a degree of economic stability. Furthermore, because the hard TAC is consistent with the rebuilding plan for GB cod, the hard TAC allows the possibility of a viable economic future for the hook-and-line fleet.

Monthly and weekly quota targets may spread out the catch evenly throughout the year, ensuring opportunities for a diverse set of fishermen, including those who choose to fish more intensively for GB cod at one time of the year or another. This would more evenly distribute the revenues of the Hook Sector among individual members as well as the community. In addition, this would ensure that revenues from groundfishing are generated year round, which would be positive for fish processors and other shoreside businesses.

DAS allocations set an absolute maximum on the amount of effort the Hook Sector can expend in attempting to catch the GB cod allocation each year. DAS restrictions and DAS allocation cuts and their social impacts overall are well-documented in the Amendment 13 FSEIS and Framework 42 EA. For the purposes of this EA, usage of DAS as envisioned in the Operations Plan would serve to maintain the relative distribution of effort within the Hook Sector. Compared to the No Action Alternative, this alternative would have positive social benefits by maintaining a social structure that is familiar to the community. Generally, fishermen who caught the most during the qualifying period and brought the most catch history to the Hook Sector are the same members who bring the most DAS to the Hook Sector. Thus, relative effort in the Hook Sector would be similar to what it was during the qualifying period. This would keep a similar economic hierarchy in place.

The Hook Sector notification provision allows the Manager to monitor the Hook Sector members in real time so as to ensure that the hard TAC is not exceeded. However, given that the hard TAC has never been exceeded, this provision is likely to have negligible effect on sector participants and the community as a whole.

The DAS redistribution stipulation allows Hook Sector members to maximize efficiency within the Hook Sector, creating a positive social benefit for the fleet and the community, similar to the No Action alternative. Through resource sharing, the community would

achieve maximum rents while minimizing efforts in the short term. As stated earlier, this would also have corollary safety benefits. The Hook Sector allows members the necessary flexibility and means to create and implement business plans which maintain fishing businesses while GB cod stocks rebuild. This is one of the underlying principles of sector allocation. Since DAS redistribution/pooling is similar to Common Pool fishery rules, this is a “negligible” effect to Sector participants and the community.

The full retention requirement ensures that all legal-sized GB cod caught by Hook Sector members would be landed and counted against the Hook Sector quota. This would end regulatory discards of legal-sized GB cod, allowing Hook Sector members to maximize per trip revenue. This creates an economic benefit to the Hook Sector, as well as the community and the Nation as a whole because legal-sized GB cod caught in excess of 1,000 lbs/DAS would not be wasted.

An exemption from species trip limits would provide incremental economic opportunity/revenue to Sector members (above and beyond the revenue generated by 1,000 lb GB Cod per trip limit) and, indirectly, the community supporting the sector as a whole.

Gear restrictions would ensure that Hook Sector members would only pursue groundfish with fixed gear. An exemption from hook limits would provide the flexibility for Hook Sector members to maximize revenue by bringing in more fish when the market improves. It would also allow fishermen to take advantage of temporal and seasonal opportunities to catch GB cod while avoiding bycatch of other species. Creating the flexibility to maximize revenue per trip would allow the fleet to maximize revenue while minimizing expenses. This would bring positive economic impacts compared to the No Action Alternative.

The GB Seasonal Closure exemption would allow Hook Sector members to catch quota in May using hook gear. This would allow Sector members to fish in May, providing a positive social and economic impact to both the members and buyers who will earn revenues otherwise unavailable in May.

Access to Closed (SAP) areas allow for substantial revenue to both Sector members and the Ports as well as significant revenue from (especially) haddock comes from fishing in the Special Access Program (SAP). Therefore, this Harvest Rule has a positive socio-economic impact on Sector members and the Ports of Chatham and Harwichport.

The Operating Area allows Hook Sector members to continue to pursue monkfish, an economic necessity to nearly every member, in their traditional fishing areas with traditional fixed gear while still maintaining accountability and responsibility for any legal-sized GB cod caught.

The exemption from Observer notification requirements in the Western US/Canada area would allow the Hook Sector members to prosecute their traditional fishery in a manner consistent with the intent of the Hook Sector concept. This measure would restore access

to traditional fishing grounds by eliminating a restriction which is unnecessary on a fleet of hook-and-line vessels. Currently, members cannot accurately predict trips into the Western US/Canada area 72 hours in advance. Compliance with the 72 hour requirement has resulted in a *de facto* area closure for hook-and-line fishermen who traditionally day-fish in pursuit of GB cod and haddock. Increases in opportunity would have positive economic impacts for Hook Sector members.

Exemption from additional measures designed to protect SOC (yellowtail flounder, winter flounder, white hake) such as differential counting of DAS would allow the Hook Sector to pursue its allocation of GB cod in traditional fishing areas. This measure is consistent with previously stated intents of Amendment 13 in that it does not require these fishermen to unnecessarily accept reductions in fishing opportunity since their bycatch of SOC species is so low. Faith and security in the concept of "Sectors being accountable only for their actions" would be maintained.

The prorating of DAS and landings results in no net increase, nor decrease, in harvesting; however, it does spread out the revenue stream for Sector members and the community that supports the Sector. Accordingly, there is a positive economic impact of this Harvest Rule on Sector members and the community as a whole.

The Preferred Alternative would have positive social impacts for the Hook Sector and the Chatham/Harwichport area. The Hook Sector Operation Plan and the Sectors participation in the SAPs can partially mitigate the negative social and economic impacts of effort reductions associated with on-going rebuilding timeframes. These management measures allow for targeting healthier stocks while limiting impact on less healthy stocks, and providing flexibility for fishing businesses, can be achieved readily by the Hook Sector. Implementation of the Operations Plan for FY 2009 would provide regulatory flexibility and safety benefits and would allow a cooperative harvest and the maximization of economic opportunity. Approval of the Operations Plan and allocation of a GB cod quota would allow the Hook Sector the flexibility it needs to maximize revenues while minimizing expenses in the short term. It would allow Chatham/Harwichport to remain in the commercial groundfish business and ultimately benefit from the rebuilding of the groundfish resource.

Under the No Action Alternative, all Hook Sector vessels would remain in the Common Pool and would operate under the rules implemented by Amendment 13 and subsequent actions. The Amendment 13 Final Supplemental Environmental Impact Statement (FSEIS) concluded that there would probably be negative impacts on fishing communities throughout the region because of restricted fishing activity through DAS cuts, possession limits, and other measures, would disproportionately borne by those ports that rely heavily on multispecies. As indicated, Chatham and Harwichport rely on multispecies revenue to generate a majority of their income. Furthermore, recent actions taken to rebuild NE multispecies stocks (e.g., FW 40b, FW 41, and FW42) have further resulted in economic losses for individuals and communities that rely on multispecies.

The flexibility to switch fisheries has been lost due to effort and mortality restrictions, and other actions taken to rebuild stocks. At the Social Impact Informational Meetings held in 2007, Chatham fishermen reported that regulations have “boxed them in” to particular fisheries, making it difficult or impossible for them to maximize their opportunities and/or adjust to changing conditions. When combined with the inherent limitations of small vessels, the regulations have reduced fishing opportunities to the point that many fishermen cannot guarantee a year-round income from fishing for themselves or for their crew.

The No Action Alternative would have negative social impacts on Hook Sector members and on the Chatham/Harwich community. The daily GB cod landing limit (1,000 lbs), in addition to a continued reduction in DAS (up to 40 percent), differential counting of DAS in traditional areas adjacent to Chatham and Harwichport (2:1), hook limits, and continued Closed Areas would likely eliminate the traditional, small-boat fleet, causing negative social impacts. This would cause disruption for shore-based businesses in Chatham/Harwichport and could eventually lead to the loss of piers, wharves, and docks, all of which are in high demand for residential purposes. This outcome would further diminish the possibility for these communities to re-enter the fishery once stocks have rebuilt. The well-documented social ills that follow the collapse of a traditional industry are likely to result without approval of the Preferred Alternative.

5.1.1.6 Summary of Impacts: Direct and indirect impacts to human communities

The FY 2009 Hook Sector direct and indirect impacts on the human community of the Hook Sector and the Chatham/Harwichport area is expected to be “positive” compared to the Common Pool fishery (Table 5.1) for the following reasons:

- TAC would set absolute maximum poundage of GB cod that the Hook Sector can catch each year, which sets an approximate amount of revenue a fisherman or a fishing community can expect for the year, which is important for business planning. This revenue stream helps the Sector members and the community supporting the sector as a whole, resulting in a positive overall human community impact.
- Monthly and weekly quota targets could spread out the catch evenly throughout the year, ensuring opportunities for a diverse set of fishermen and the community supporting Sector members, resulting in a positive overall human community impact.
- DAS allocations would set an absolute maximum on the amount of effort the Hook Sector can expend in attempting to catch the Hook Sector allocation each year, which helps to maintain the relative distribution of effort within the Hook Sector ensuring opportunities for Sector members and the community supporting the sector, resulting in a positive overall human community impact.
- The Hook Sector notification (i.e., Sector call-in) provision allows the Manager to monitor the Hook Sector members in real time so as to ensure that the hard TAC is

not exceeded. However, given that the hard TAC has never been exceeded, this provision is likely to have negligible impact on sector participants and the community as a whole.

- **DAS Transfer/Lease:** This Harvest Rule allows for transfer of effort within the Sector, maximizing efficiency for Sector members (and transfer of effort outside the sector, if approved by the NMFS Regional Administrator). Therefore, it is a positive impact on the Sector and the local communities since maximized effort likely will result in additional opportunity and revenue.
- The full retention requirement would ensure that all legal-sized GB cod caught by Hook Sector members would be landed and counted against the Hook Sector quota allowing Hook Sector members to maximize per trip revenue. Increased revenues have a positive impact on Sector members and the community supporting them as a whole.
- An exemption from species trip limits would provide incremental economic opportunity/revenue to Sector members (above and beyond the revenue generated by 1,000 lb GB Cod per trip limit), resulting in a positive impact for Sector members and the community supporting the sector as a whole. Though winter flounder and yellowtail have lower trip limits than the Common Pool fishery, it is not expected that these species will substantively reduce revenue to the Sector membership.
- **Hook Size:** Fishermen already have 12/0 circle hook gear, so there is a negligible impact requiring this hook gear. Moreover, an exemption from hook limits would provide the flexibility for Hook Sector members to maximize revenue by bringing in more fish when the market is improved and at the same time, minimize expenses, resulting in an overall positive impact for this Harvest Rule.
- The GB Seasonal Closure/spawning season exemption would allow Hook Sector members to catch quota in May using hook gear, resulting in a positive economic impact to Sector members and the community supporting the sector.
- The SAP closure exemption would allow Hook Sector members to catch quota in the SAP using hook gear, resulting in a positive economic impact to Sector members and the community supporting the sector.
- Operating within the Sector Area would allow Hook Sector members to continue to pursue monkfish, an economic necessity to nearly every member, resulting in a positive economic impact to Sector members and the community supporting the sector.
- **Gear Restrictions:** The exemption from hook limits would provide the flexibility for Hook Sector members using hook gear to maximize revenue by bringing in more fish when the market is better while at the same time, minimizing expenses,

resulting in a positive impact to Sector members and the community supporting the sector.

- **Distribution and Pooling of DAS:** The DAS redistribution stipulation allows Hook Sector members to maximize efficiency within the Hook Sector, creating a positive social benefit for the fleet and the community, similar to the No Action alternative. Since DAS redistribution/pooling is similar to Common Pool fishery rules, this is a negligible effect to Sector participants and the community.
- **Observer Notification Requirements in the US/Canada Resource Management Area:** Exemption from Observer notification requirements in the Western US/CA area would allow the Hook Sector to pursue its allocation of GB cod in traditional fishing areas, resulting in a positive benefit to Sector membership and the community due to more flexibility for fishing effort, hence, greater opportunity for revenue generation.
- **Additional DAS Management Measures:** Exemption from additional measures designed to protect SOC (yellowtail flounder, winter flounder, white hake) such as differential counting of DAS would allow the Hook Sector to pursue its allocation of GB cod in traditional fishing areas, resulting in a positive benefit to Sector membership and the community due to more flexibility for fishing effort, hence, greater opportunity for revenue generation.
- **Prorating of Days-at Sea and Landings:** This Harvest Rule results in no net increase, nor decrease, in harvesting; however, it does spread out the revenue stream for Sector members and the community that supports the sector. Accordingly, there is a positive economic impact of this Harvest Rule on Sector members and the community as a whole.
- **Continued vitality of the Hook Sector through the approval of the FY 2009 Hook Sector Operations Plan and TAC allocation** would provide needed revenue to the many shore-based fishery support businesses and to the towns of Chatham and Harwichport.

Direct and Indirect Conclusion of the Hook Sector: The direct and indirect effects of the FY 2009 Hook Sector (Preferred Alternative) compared to the Common Pool fishery (No Action Alternative) on the VECs are summarized in Table 5.1. The Preferred Alternative would have overall positive biological impacts on the allocated species, GB cod, and other landed species with respect to direct and indirect impacts presented by the proposed FY 2009 Hook Sector relative to the Common Pool fishery. The preferred alternative would yield positive social and economic impacts to affected communities and Sector members. Similarly, the Preferred Alternative would provide overall positive benefit to bycatch/discards, protected resources, habitat/Essential Fish Habitat, and human communities (i.e., sector participants and the ports of Chatham and Harwichport) relative to the Common Pool fishery.

5.2 Cumulative Effects Analysis

The need for a cumulative effects analysis (CEA) is referenced in the Council on Environmental Quality (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.

This CEA assesses the combined impact of the direct and indirect effects of this Sector with the impact from the past, present, and reasonably foreseeable future 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 Hook Sector (Preferred Alternative) with the impacts of fishing under the Common Pool (No Action Alternative) as currently regulated by Amendment 13 of the NE 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, Amendment 16 was still draft and its promulgation date was uncertain. When finalized, the impacts of Common Pool fishing will be addressed in the EIS accompanying Amendment 16.

Valued Ecosystem Components (VECs): The cumulative effects analysis focuses on the VECs:

- Habitat (including EFH)
- Regulated stocks (allocated groundfish species and other landed species)
- Bycatch/discards
- Protected resources/Endangered species
- Human communities (Ports of Sector operation and Sector members)

No subsistence fishing or Indian treaty fishing occurs in the area affected by the Hook Sector; therefore, impacts related to these activities are not considered in the CEA.

Temporal and Geographic Scope of the Analysis: The temporal range that will be considered for habitat, regulated stocks, bycatch/discards, and human communities, extends from 2004, the year that Amendment 13 was implemented, through the publication of that action. 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 serious effort reductions. The temporal range considered for endangered and other protected species begins in the 1980s and 1990s when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis examines the period of approval for this action through the implementation of Amendment 16, expected on May 1, 2010. This is because Amendment 16 could modify the management process for the groundfish fishery and sectors in ways that cannot be predicted with any certainty at this time.

The geographic scope considered for cumulative effects to habitat, regulated species, and bycatch/discards 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:

Fish and Protected Species:

Positive - actions that increase stock/population size;

Negative - actions that decrease stock/population size

Physical Environment and EFH/Habitat:

Positive -actions that improve the quality or reduce disturbance of habitat;

Negative -actions that degrade the quality or increase disturbance of habitat

Social and Economic Environment:

Positive - actions that increase revenue and well being of fishermen and/or associated businesses;

Negative - actions that decrease revenue and well being of fishermen and/or associated businesses

Low (as in *low* positive or *low* negative): to a lesser degree

High (as in *high* positive or *high* negative): to a greater degree

Negligible: a degree of impact immeasurably small

Likely: based upon the anticipated action, the likely effect is based upon best professional judgment.

ND: Effects cannot be determined (ND) within the temporal range considered.

5.2.1 Fishing Effects: Past, Present and Reasonably Foreseeable Future Groundfish and Related Management Actions (Table 5.9)

Table 5.9 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 Hook Sector which are outlined in Table 5.10.

5.2.1.1 Physical Environment/Habitat/EFH

The analysis of past, present, and reasonably foreseeable future fishing actions that affect habitat in the region in which the Hook Sector would operate is limited to the area described in Section 3.1.2.

Past, Present Actions: Amendment 13 and FW 42 are regulations that have reduced fishing effort. Reduction in fishing effort results in less gear interaction with bottom habitat, effectively resulting in low positive effects. 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 non-hook vessels to join the 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 Atlantic Large Whale Take Reduction Plan 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.

Future Actions: Reasonably foreseeable future actions that will likely affect habitat include Amendment 16 and the Essential Fish Habitat Omnibus Amendment (Omnibus EFH Amendment) (both under development at this time). Amendment 16 will likely implement further effort reductions for groundfish and may also add sectors or modify the sector process. The Omnibus EFH Amendment will provide for a review and update of EFH designations, identify Habitat Areas of Particular Concern (HAPCs), as well as provide an update on the status of current knowledge of gear impacts. Implementation of Amendment 16 and the Omnibus EFH Amendment will likely result in positive effects to bottom EFH due to less fishing and related gear impacts on bottom habitat.

Sum of Impacts: As indicated in Table 5.9, Amendment 13, and FW 42 resulted in 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 bottom as more cod was caught with low impact fixed gear. The Atlantic Large Whale Take Reduction Plan resulted in “low negative” to

“negligible” effects on habitat due to the possibility of groundline sweep on the bottom and “ghost gear.” Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on habitat.

5.2.1.2 Allocated Species and Other Landed Species

Past, 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 fishfinders and navigation equipment, contributed to a greater efficiency and intensity of fishing, which in turn resulted in a precipitous drop in landings during the 1980s to an all-time low in the early 1990s. As noted above, 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 species and other landed groundfish species have been reviewed with some detail in the FSEIS of Amendment 13, the EA for FW 42, and Section 5.1.1 of this document. Amendment 13 and FW 42 have implemented 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 other landed species caught in conjunction with the allocated species or other groundfish. 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. Stocks of haddock, redfish, and American plaice have been rebuilt, which indicates Amendment 13 and FW 42 management actions have had positive effects on certain groundfish stocks. All other groundfish stocks are still experiencing overfishing, indicating the need for additional management measures.

As discussed in Section 4.2, the top five species other than Atlantic cod that were landed by the Hook Sector in FY 2007 were haddock, cusk, white hake, Acadian redfish, and pollock. Haddock, white hake, Acadian redfish, and pollock are managed by the NE Multispecies FMP. Cusk is not under a management plan

Future Actions: Amendment 16 is expected to further reduce fishing effort on overfished stocks in order to achieve mandated stock rebuilding timelines. Such action is expected to result in positive effects on both the allocated species for the Hook Sector and other landed species that are taken by this Sector. The provisions in the Omnibus EFH Amendment could result in greater habitat protection for some areas, resulting in a likely positive effect on groundfish. Further, should changes to the Harbor Porpoise Take

Reduction Plan be implemented (the Harbor Porpoise Take Reduction Team met last winter and an amendment to the plan is under development), vessels could face additional restrictions, possibly resulting in positive impacts to groundfish and other species taken incidentally.

Sum of Impacts: As indicated in Table 5.9, Amendment 13 and FW 42 had positive effects on allocated and other landed species. Other FMPs that affect other species landed by groundfish sectors have also resulted in positive effects on allocated and other landed species. Future measures that will likely restrict fishing effort (Amendment 16, Omnibus EFH, Harbor Porpoise Take Reduction Plan) will also have positive effects on allocated and landed species. Actions that increase fishing effort (FW 40A and 40B), had low negative effects on allocated and landed species. The potential impacts associated with the management decision for wolffish cannot be determined at this time. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on allocated and landed species.

5.2.1.3 Bycatch/Discards

Past, Present Actions: As defined in the Magnuson 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 section, bycatch refers to discards of species referred to in Table 4.10. Management actions that reduce fishing effort have positive effects on both landed species and on bycatch. Conversely, actions that increase fishing effort (i.e., FW 40A and FW 40b) had low negative effects on both landed species and bycatch.

Since dogfish represent approximately 91 percent of the Hook Sector discards by weight in FY 2007, and is managed under a FMP separate from the NE Multispecies FMP, the impacts of the dogfish FMP are briefly discussed. As described in more detail in the preceding section, recent reports indicate that dogfish are not overfished nor is overfishing occurring, and female stock spawning biomass is likely to be rebuilt. This development may result in new management measures, such as a change in quota for this species, and will be developed through the specifications setting process for the 2009 fishing year. In general, an increase in fishing effort generally results in an increase in bycatch (i.e., negative impact).

Future Actions: Amendment 16 would likely result in the reduction of bycatch (a positive effect) due to possible reductions in fishing effort. Implementation of the Omnibus EFH 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 and other landed species, if revisions are made to the Harbor Porpoise Take Reduction Plan, vessels could face additional restrictions, possibly resulting in positive impacts to bycatch through effort reductions.

Sum of Impacts: As indicated in Table 5.9, actions that reduce fishing effort have had positive effects on bycatch because in general, less fishing effort results in less bycatch. Conversely, actions that increase fishing effort (i.e., FW 40A and FW 40b) are

considered to have low negative effects to bycatch because more fishing generally results in more bycatch. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on bycatch.

5.2.1.4 Protected Resources

This section includes discussion of protected resources management actions that are relevant to groundfish and/or the Hook Sector. Since these actions are not discussed elsewhere in the document, brief summaries of these actions and their impacts are provided here.

Past, Present Actions: The analysis of past and present fishing actions that have affected endangered and protected species is limited to those species which have a recorded history of interacting with the Hook Sector fishing operation, as approval of the Sector operations plan may have additional effects which need to be considered in a CEA. Further detail on the status of endangered and protected species in the affected area and their history with the Hook Sector can be found in Section 4.4 of this document.

Reductions in fishing effort through the implementation of management actions such as Amendment 13 and FW 42 have had a positive effect 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 and protected resources.

In addition to these actions, NMFS has implemented specific regulatory actions to reduce injuries and mortalities from gear interactions. The Atlantic Large Whale Take Reduction Plan (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 nonregulatory 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: Amendment 16 will further reduce fishing effort, likely resulting in reduced gear interactions with protected resources, considered to be a positive effect. The likely impacts of the Omnibus EFH Amendment on protected resources cannot be determined at this time. The Harbor Porpoise Take Reduction Plan for the Gulf of Maine and Mid-Atlantic Coasts was originally implemented in 1998 and new action that could modify the Plan is under development. Future measures of this plan may be implemented if take reduction goals are not met, which could further reduce fishing effort. In October 2008, Conservation Law Foundation petitioned NOAA NMFS to list the Atlantic

wolffish as an endangered species. An endangered species listing would require federal officials to implement a plan to protect and restore the Atlantic wolffish and their habitat. However, no management decision has been made on this action, therefore likely impacts cannot be determined.

Sum of Impacts As indicated in Table 5.9, 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 Omnibus EFH Amendment, all other management actions described were designed to benefit protected resources; therefore these actions are all considered to have positive effects on this VEC. Overall, the cumulative effect of past, present, and reasonably foreseeable future fishing actions have resulted in positive effects on protected resources.

5.2.1.5 Human Communities

The following discussion focuses on the Port communities of Chatham and Harwich, the home ports of the Hook Sector. Discussion of impacts to Sector members refers to the participants in the Sector which is the focus of this EA.

Past, 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 members of the Hook Sector include Amendment 13 and subsequent actions. These actions substantially cut fishing effort in order to rebuild stocks through 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 GB Cod Hook Sector, which has increased the efficiency of Hook Sector members, reduced overhead costs, and fostered cooperative spirit in the communities. FW 42 implemented the GB Cod Fixed Gear Sector, and the associated expansion of Sector membership benefits, resulting in positive effects for the GB Cod Hook Sector. Because FW 42 implemented further reductions in fishing on groundfish, this action caused substantial negative impacts in the short term to Chatham and Harwich, which are groundfish-dependent ports. In the long-term, these ports are expected to experience positive effects as groundfish stocks rebuild to sustainable levels.

FW 40A implemented the Closed Area I Hook Gear Haddock SAP which allowed increased opportunities for the Hook Sector to fish healthy haddock stocks. This action provided increased revenue and positive impacts for the Chatham-Harwich communities in general and to Sector members specifically.

FW 40B allowed vessels with no hook history to join the 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 effect to the Sector participants.

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. However, this action put Sectors at a slight disadvantage because their incidental cod catch limit was lower than that for non-Sector vessels.

As discussed in Section 5.2.3.1.4, the Atlantic Large Whale Take Reduction Plan 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.

Future Actions: Amendment 16 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 Harbor Porpoise Take Reduction Plan could have negative impacts, particularly if the impacts from this plan compound reductions implemented via Amendment 16. Cumulative effects of the Omnibus EFH Amendment cannot easily be determined, but if additional effort restrictions were implemented, this action too would likely have a negative impact though it is unclear whether the ports of Harwich or Chatham would be impacted.

Sum of Impacts: As indicated in Table 5.3, the effects of past, present, and reasonably foreseeable future fishery management actions have been positive on nearly all VECs with the exception of the 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.

Table 5.9. Summary of effects of the proposed FY 2009 Hook Sector (Preferred Alternative) on VECs from past, present, and reasonably foreseeable future FMP and other fishery related actions with the exception of sector operations. **H(+)**= means the action had a highly positive (i.e. more than minimal) effect on the VEC, **L(+)**= means the action had a slightly positive effect on the VEC, **(+)** = positive effect,, **L(-)**= means the action had a slightly negative effect on the VEC, **(-)** means the action had a negative effect on the VEC, **NEGL**= means the action had a negligible effect on the VEC, **N/A** means not analyzed.

Fishing Actions	Habitat Impacts	Biological Impacts			Human Community Impact	
	Habitat	Allocated Species/ Other Landed Species	Bycatch/ Discards	Endangered/ Protected Species	Ports Chatham/ Harwichport	Fixed Gear Sector Participants
Past and Present Fishing Actions						
Amendment 13 (2004) Implemented requirements for stock rebuilding plans and dramatically cut fishing effort on groundfish stocks	L+	H+	H+	L+	(-)	(-)
FW 40A (2004)- allowed additional fishing on healthy haddock stocks for the Hook Sector, and flexibility in DAS accounting	NEGL	L-	L-	NEGL	H+	NEGL
FW41 (2005)- allowed non- Hook sector fishing on healthy haddock stocks	NEGL	NEGL	NEGL	NEGL	H+	NEGL
FW42 (2006)- Implemented further reductions in fishing effort based upon stock assessment data and stock rebuilding needs, implemented GB cod Fixed Gear Sector		(+)	(+)	(+)	(-) overall	(-) overall
1996 Amendments to MSFCMA allowing for the identification of EFH	(+)	(+)	(+)	NEGL	(-)	(-)
Harbor Porpoise Take Reduction Plan	N/A	N/A	N/A	(+)	L(-)	L(-)
Atlantic Large Whale Take Reduction Plan	L(-)	NEGL	NEGL	(+)	L(-)	L(-)
Chain-Mat Modified Dredge for Scallop Fishery	N/A	N/A	N/A	(+)	L(-)	L(-)
Reasonably Foreseeable Future Fishing Actions						
Amendment 16						
Omnibus Essential Fish Habitat Amendment	Likely (+)	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Draft Atlantic Trawl Gear Take Reduction Plan	NEGL	Likely (+)	Likely (+)	Likely (+)	Likely (-)	Likely (-)
Implementation of the Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic and Gulf of Mexico Fisheries	Likely NEG	Likely NEG	Likely NEG	Likely (+)	Likely L(-) for trawlers	Likely L(-) For trawlers
Sum of Impacts Sum of Effects from major recent fishery-related actions, and reasonably foreseeable future fishing actions	(+)	(+)	(+)	(+)	(-)	(-)

5.2.2 Effects from Other Sector Operations with Commonality to the FY 2009 Fixed Gear Sector

The CCCHFA GB Cod Fixed Gear Sector (Fixed Gear Sector) is the only other sector that has commonality with the Hook Sector operations. The Fixed Gear Sector was formally implemented in November 2006 following the passage of FW 42 to the NE Multispecies FMP. The Fixed Gear Sector is a group of small, day-boat hook-and-line and gillnet fishermen who have voluntarily committed to working together to manage a hard total allowable catch (TAC) of Georges Bank cod. In FY 2008 the Hook Sector was comprised of 33 (Source: 2008 Ops Plan). In FY 2009 there will be 23 fishing vessels in the Fixed Gear Sector.

The Fixed Gear Sector operates under a hard TAC of GB cod, which assures that the Fixed Gear Sector operations are consistent with the rebuilding plan for GB cod. Real-time landings data are employed to ensure compliance with the hard TAC. Fixed Gear Sector members fish for groundfish exclusively within the GB Cod Hook Sector Area which is also shared by the Hook Sector. Furthermore, Fixed Gear Sector members utilize only hook gear and gillnets to catch groundfish. Fixed Gear Sector members retain all legal-sized marketable GB cod in order to minimize bycatch of the allocated species. The Fixed Gear Sector Manager (Manager) oversees day-to-day operations of the Fixed Gear Sector. The GB cod Quota is divided monthly, ensuring that there would be an opportunity for Fixed Gear Sector members to fish each week/month of the year. Monthly distribution of the quota would serve to maintain equity between vessels within the Fixed Gear Sector that have traditionally fished during different times of the year. The Manager has the authority to adjust the monthly quota targets if necessary, and would report such adjustments to the NMFS.

5.2.2.1 Physical Environment/Habitat

Hook-and-line and gillnet gear is characterized as having little impact in benthic and demersal habitats. As a result, the Fixed Gear Sector Operations Plan is expected to result in “positive” habitat impacts. Despite not having achieved its TAC in any year of operation, the Fixed Gear Sector would cease fishing with gear capable of catching GB cod upon reaching the TAC, which would subsequently end any gear-habitat interactions. Exemption from the May GB Seasonal Closure and the hook limit may result in more hook-and-line coming in contact with the benthic habitat, but given the low impact of the gear the effects are considered negligible.

5.2.2.2 Allocated Species and Other Landed Species

In FY 2007 the 33 vessels in the Fixed Gear Sector were allocated 1,699,985 lbs (771 mt) of GB cod. As of April 30, 2008, the Fixed Gear Sector had caught 923,760 lbs (419 mt) or 54.3 percent of its hard TAC and 1,051,171 lbs (477 mt) of other landed species. Figure 5.11 shows the relative landings for GB cod

during FY 2007 among the Common Pool, Hook Sector, and Fixed Gear Sector. In FY 2007, GB cod accounted for 40.70 percent of the total fish landed, followed by skate wings (23.62 percent) and monkfish (9.78 percent). Since, FY 2006, weekly quota targets have never been triggered because the Fixed Gear Sector has never achieved 95 percent of its TAC.

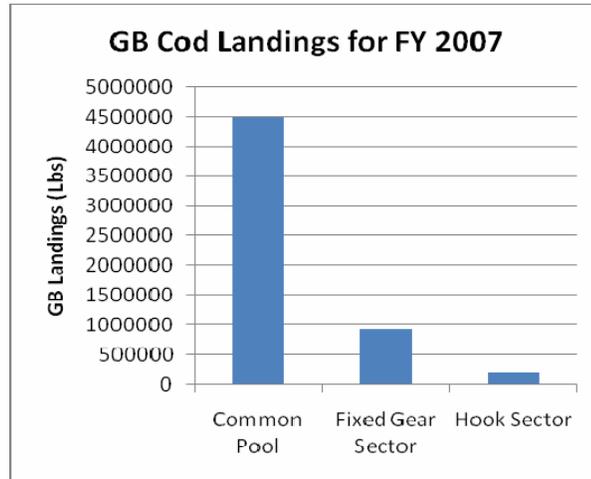


Figure 5.11. Georges Bank Cod Landings for FY 2007 for the Common Pool, Fixed Gear, and Sector Hook Sector Fisheries.

The Fixed Gear Sector is expected to result in “positive” biological impacts to GB cod (allocated species) and other landed species. The Sector operations plan exempts members from the GB cod landing limit and mandates for full retention of legal-sized GB cod. Mandatory retention of legal-sized cod would reduce regulatory discarding, and coupled with a hard TAC for GB cod would provide for a mechanism to control mortality effectively. GOM cod (or other GOM species) will not be harvested by Fixed Gear Sector vessels due to the restricted operating area. Monthly and weekly quota targets have helped ensure that GB cod catch is evenly distributed throughout the course of the year. Exemption from the May Seasonal Closure will allow for controlled harvest of GB cod, and other allocated species. Although the Fixed Gear Sector has not achieved its TAC in any year of operation, the Fixed Gear Sector would cease fishing with gear capable of catching GB cod upon reaching the TAC, therefore ending fishing on GB cod and any other allocated species.

5.2.2.3 Bycatch and Discard Species

In FY 2007, the Fixed Gear Sector discarded 26,772 lbs (12 mt) of GB cod due to predation or sublegal size. Overall, discards were predominantly spiny dogfish, (1,159,067 lbs, or 91.25 percent of all discards by weight), followed by GB cod (2.11 percent) whole monkfish (2.10 percent). The cod discards were primarily due to predation (dogfish, seals, and slime eels) or size limits. The monkfish discards were primarily a result of trip limits.

The Fixed Gear Sector Operations plan is expected to result in “positive” biological impacts to bycatch and discard species. A TAC, DAS, and monthly quotas are part of the Hook Sector Operations Plan and would serve to control effort and mortality on bycatch and discard species as they have in the past. The Fixed Gear Sector must cease fishing with gear capable of catching GB cod upon reaching the TAC, therefore ending potential interactions with bycatch and discard species.

5.2.2.4 Protected Resources

The Northeast/Mid-Atlantic bottom longline/hook-and-line fishery recorded no incidental injuries or deaths of any endangered marine mammals, seals, or sea turtles in the MMPA LOF for 2005 or 2006 for the proposed area. Additionally, the NE Fisheries Observer Program Annual Marine Mammal and Sea Turtle Incidental Take Report showed zero incidental takes of marine mammals, seals, or sea turtles by bottom longline gear in 2005 and 2006 in the proposed area.

In FY 2007, the Fixed Gear Sector recorded the following incidental takes: 4 greater shearwater, 7 grey seal, 5 harbor porpoise, 1 herring gull, 1 northern fulmar, and 3 seals.

Operations of the Fixed Gear Sector is expected to result in “positive” biological impacts to protected species. The Fixed Gear Sector must cease fishing with gear capable of catching GB cod upon reaching the TAC, therefore ending potential interactions with protected species. As with the Common Pool fishery limits on hook size and style (circle only) limits discourage catching protected species and increase the survivability of released animals. Protected species interactions are extremely rare with hook-and-line gear and somewhat more common with gillnet gear. The members of the Fixed Gear Sector fish in a well-defined area, confining interactions with endangered and protected species.

5.2.2.5 Human Communities

Since 2006, the Fixed Gear Sector management has annually empowered between 1 and 33 traditional hook-and-line and gillnet vessels from Chatham and Harwichport to align their fishing businesses with conservation measures. As a result, Fixed Gear Sector members are achieving more flexibility and efficiency than previous years. Since hook fishing is labor intensive, the Fixed Gear Sector would help ensure that shoreside jobs remain viable opportunities in Chatham/Harwichport. Other shoreside jobs that directly and materially benefit from the Hook Sector include businesses such as baiting, gear suppliers, fuel, marine equipment, fish markets, and restaurants. Sustaining these businesses would have social and economic benefits that trickle throughout the community. The Fixed Gear Sector and the communities it supports are progressing towards achieving maximum social benefits by providing increased predictability and long-range planning for their fishing businesses.

The Fixed Gear Sector Operations Plan is expected to result in “positive” social impacts to the Hook Sector and the communities of Chatham and Harwichport, Massachusetts. Monthly and weekly quota targets spread catch throughout the year, which allows the Hook Sector members to harvest GB cod year-round. The TAC, DAS, and quotas ensure that overfishing of GB cod does not occur, thereby allowing for the Hook Sector to fish for GB cod while stocks rebuild. These management programs, and applicable regulations, function to stabilize GB cod stocks, facilitating a viable GB cod fishery for both the Hook and Fixed Gear Sectors. The exemptions from daily trip limits and the full retention of cod allow fishermen to fish more efficiently and economically. Sector members are allowed to reduce the number of trips they take (by eliminating the GB cod daily trip limit in exchange for an annual hard TAC), and as a result, overhead and operational costs can be reduced for both the Fixed Gear Sector and Hook Sector. Additionally, economic benefits can be accrued to the members because they are given the flexibility to make market-based decisions on when and where to fish. For example, Sector members are given the opportunity to not fish if fish prices are considered to be too low; in the Common Pool, the drive to achieve the daily trip limit as often as possible (because unharvested catch does not carry forward the way a TAC does) does not allow for such behavior. Collaboration and cooperation now occurs among fishermen where it may not have in the past.

The overall effects from the future likely future Fixed Gear Sector operations with commonality to the FY 2009 Hook Sector are summarized by Table 5.10.

Table 5.10. Summary of effects from future likely sector operations which have commonality with the proposed FY 2009 Georges Bank Cod Hook Sector Operations Plan.

Sector	Habitat Impacts	Biological Impacts			Human Community Impact	
	Habitat	Allocated Species/ Other Landed Species	Bycatch/ Discards	Protected Resources	Ports Chatham/Harwich	Hook Sector Participants
Sector B- Brief description of Georges Bank Cod Fixed Gear Sector Operations Plan: The Fixed Gear Sector was formally implemented in FY 2006 following the passage of Framework 42 to the Northeast Multispecies FMP.. The Fixed Gear Sector is a group of small, day-boat fixed gear and hook-and-line fishermen who have voluntarily committed to working together to manage a hard total allowable catch of Georges Bank cod.	(+)	(+)	(+)	(+)	(+)	(+)
Sum of Impacts Sum of Effects from implementation of sector operations	(+)	(+)	(+)	(+)	(+)	(+)

5.2.3 Non-Fishing Effects: Past, Present, and Reasonably Foreseeable Future Actions (Table 5.11)

Non-fishing activities that introduce chemical pollutants; sewage; changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all of the identified VECs. Table 5.11 provides a summary of all past, present, and reasonably foreseeable non-fishing activities and their expected effects on VEC's in the affected environment.

Construction/Development Projects: The following is a discussion of construction and development projects that have had past, present, and reasonably foreseeable future implications to all VECs, as shown in Table 5.11. The discussion is based on past assessments that will likely continue into the future as projects are proposed. In general, human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas where they occur. Although these impacts are considered “negative” at the site, they have an overall “low negative” or “negligible” affect on each VEC due to limited exposure to the population or habitat as a whole. Examples of these activities include, but are not limited to, point source pollution, agricultural and urban runoff, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and disposal of dredged material. Many of these have occurred in the past and present and their project effects will continue in the reasonably foreseeable future. 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 species, other landed species, and protected resources. It is likely that these projects would have negative impacts caused from disturbance and construction activities in the area immediately around the affected project area. Given the wide distribution of the affected species, minor overall negative effects to offshore habitat, protected resources, and allocated and other landed species are anticipated since the affected areas are localized to the project sites, which involve a small percentage of the fish populations and their habitat. Any impacts to inshore water quality from these permitted projects, including impacts to planktonic, juvenile, and adult life stages, are unknown but likely minor due to the transient and limited exposure.

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 Southern New England/mid-Atlantic winter flounder, live out 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 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 which 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: Reasonably foreseeable future non-fishing actions in the U.S.-controlled North Atlantic that are likely to affect endangered species and protected resources includes the NMFS Final Rule on Ship Strike Reduction Measures. When finalized, this rule is expected 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 one-third of a mile apart. The turbines will be interconnected by cables, which will 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.

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 is expected to be completed in September 2008 which includes the installation of a 13-mile sub-sea pipeline. The second phase, scheduled to begin in May 2009, will connect the new pipeline to an existing pipeline network called HubLine east of Marblehead 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. This project is expected to have small, localized impacts where the pipelines and buoy anchors will be laid.

Climate Change: Several recent scientific articles and panel reports evaluating the possible effects of climate change on global ocean conditions, coastal habitats, and species composition have postulated short and long term ecosystem changes such as shifts in species distribution and assemblages (Collie, et al., 2008; United Nations Environment Programme, 2006), increased rates of coastal erosion and pollutant inputs, and changes in primary productivity and ocean circulation patterns (Hansom, 2001; Sarmiento, et al., 2004).

Such changes in global and regional oceanic conditions are predicted to occur as the result of a general trend of warming air and sea temperatures and the subsequent melting of land ice and sea ice. The warming air and sea temperatures are due to increasing levels of greenhouse gases (carbon dioxide, ozone, methane, and carbon monoxide) in the earth's atmosphere, primarily generated from anthropogenic sources. Direct evidence of this phenomenon includes the increase in global atmospheric concentration of carbon dioxide from about 280 ppm during pre-industrial times to 379 ppm in 2005 (IPCC, 2007).

Global climate prediction models and recent biological studies indicate that anthropogenic sources are affecting the earth's air and sea temperatures, sea level, and species composition, distribution, and abundance on small to large scales. The effects of climate change on the VECs cannot reasonably be predicted as the state of the science on this topic is relatively young, and at present, there is not a strong weight of evidence that climate change is negatively affecting the northeast environment. However, it is likely that any changes in VECs will not be seen in the relatively short time period considered the temporal range of this CEA. In the long-term view, it is possible there could be a gradual movement of groundfish populations to colder, northern waters which would limit the availability of these species to be harvested by U.S. vessels; however, it is not anticipated this is likely to occur within the next two years. Close regional monitoring of groundfish assemblages is advised to further examine whether climate change is affecting the distribution and abundance of groundfish currently harvested in the northeast United States.

Sum of Impacts: As indicated in Table 5.11, most of the impacts from these aforementioned activities range from "low negative" to "negligible" in the areas of the project site. 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

Table 5.11. Summary of effects from the past, present, and reasonably foreseeable non-fishing actions in the affected environment. **L(-)** means the action has a slightly negative effect on the VEC, **NEGL** means the action has a negligible effect.

Non-Fishing Actions	Biological Impacts			Habitat Impacts	Human Community Impact	
	Allocated Species/ Other Landed Species	Bycatch/ Discards	Endangered/ Protected Species	Habitat	Ports Chatham/Harwich	Fixed Gear Sector Participants
Past, Present, and Reasonably Foreseeable Future Actions						
Agricultural Runoff	L(-)	L(-)	L(-)	NEGL	NEGL	NEGL
Port Maintenance	L(-)	L(-)	NEGL	L(-)	NEGL	NEGL
Restoration Activities (wetland restoration, artificial reefs, eelgrass, etc...)	(+)	(+)	(+)	(+)	(+)	(+)
Offshore disposal of dredged materials	L(-)	L(-)	L(-)	L(-)	NEGL	NEGL
Beach Nourishment	L(-)	L(-)	NEGL	L(-)	NEGL	NEGL
Installation of infrastructure associated with liquefied natural gas terminals	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)
Installation of offshore wind farm and infrastructure	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)	Likely L(-)
Implementation of National Marine Fisheries Service Final Rule on Ship Strike Reduction Measures	Likely NEG	Likely NEG	Likely (+)	Likely NEGL	Likely NEGL	Likely NEGL
Sum of Impacts	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)

5.2.4 Summary of Direct and Indirect Effects of FY 2009 Hook Sector

This section summarizes the cumulative effects of the FY 2009 Hook Sector on each Valued Environmental Component (VEC).

5.2.4.1 Physical Environment/Habitat

The direct and indirect effects of the FY 2009 Hook Sector Operations Plan on habitat were previously assessed in Section 5.1.1.1. Gear restrictions require that Hook Sector members would only pursue groundfish with hand and line gear which have low-impact on habitat. Full retention of GB cod makes fishing more efficient, reducing gear exposure time to habitat resources. The hard TAC and DAS end Hook Sector impacts if either of those allocations is achieved before the end of the fishing year. Monthly and weekly quota targets end Hook Sector impacts on habitat when the quota is caught each month and not adjusted. However, monthly quotas have only been achieved once in the history of the Hook Sector, and monthly quota was redistributed to meet the exceedance of the monthly quota. DAS allocations set an absolute maximum on fishing effort, and therefore habitat interaction, for the Hook Sector. Elimination of the landing limit for cod in lieu of a hard TAC would allow vessels to operate more efficiently and would likely reduce fishing time due to increased fishing efficiency. By mandating daily communication with the Manager, the Hook Sector would be able to monitor its interactions with habitat in near-real time. The FY 2009 Hook Sector direct and indirect impacts on habitat are expected to be “positive” compared to the Common Pool fishery.

5.2.4.2 Allocated Species and Other Landed Species

The direct and indirect effects of the FY 2009 Hook Sector Operations Plan on allocated Species and other landed species was previously assessed in Section 5.1.1.2 and summarized in Table 5.1. The Hook Sector operates under a hard TAC which sets absolute maximum poundage of GB cod that the Hook Sector can catch each year and is consistent with the rebuilding plan for GB cod. Monthly and weekly quota targets generally spread out the catch evenly throughout the FY and ensure that the Hook Sector does not harvest the Hook Sector allocation in an overly intensive fashion to the detriment of the GB cod stock or to spawning aggregations. Weekly quota targets would be enacted, if necessary, to slow down harvest rates. DAS allocations set an absolute maximum on the amount of effort the Hook Sector can expend in attempting to catch the Hook Sector allocation each year and would continue to control mortality and ensure no overfishing of GB cod by the Hook Sector. The full retention Harvest Rule ensures that all legal-sized GB cod caught by Hook Sector members would be landed and counted against the Hook Sector quota ensuring that the Hook Sector does not overfish their TAC through regulatory discards of legal-sized GB cod. Elimination of the landing limit for GB cod in exchange for a hard TAC would allow vessels to operate more efficiently, eliminate regulatory discarding, and may reduce fishing time due to the achievement of the TAC. The exemption from hook limits would have minimal impacts as effort, landings, and discards are strictly controlled through previous measures (hard TAC of GB cod, layered with DAS). The GB Seasonal Closure/Spawning Season exemption has had minimal impacts on GB cod stocks due to low landings relative to the TAC. The

fishing area is the GB Cod Hook Sector Operating Area (defined earlier) which voluntarily restricts Hook Sector members to a well-defined area, thereby allowing for a more-accurate qualification and quantification of impacts. In addition, the Hook Sector is proposing additional trip limits on SOC which are more restrictive than proposed for the Common Pool. The prorating of DAS and landings would allow the proposed Hook Sector members to commence operation prior to formal execution of the sector agreement; however, all GB cod caught by the Hook Sector would be accounted for and deducted from the Hook Sector's aggregate allocation of GB cod. Overall, the FY 2009 Fixed Gear Sector direct and indirect impacts on GB cod and other landed species is expected to be "positive" compared to the Common Pool fishery.

5.2.4.3 Bycatch and Discards

The direct and indirect effects of the FY 2009 Hook Sector Operations Plan on bycatch and discards were previously assessed in Section 5.1.1.3. The TAC ensures that only a fixed amount of GB cod catch occurs, thereby limiting interaction with bycatch and discard species. DAS allocations set an absolute maximum on Hook Sector effort each year. Exemption from the differential DAS counting areas reflects a continued avoidance of yellowtail flounder and other stocks of concern by Hook Sector members. Hook size and style (circle only) limits discourage the catch of sublegal GB cod and other bycatch and discard species, and increases the survivability of releases. The Hook Sector uses bait (herring) during the SAPs that minimize cod bycatch. Only hook-and-line gear is utilized. Hook size (12/0) minimizes smaller fish. Full retention and the trip limit exemption for GB cod makes fishing more efficient, possibly reducing gear exposure time with bycatch and discards species. Sector Operations in a well-defined area confines the interactions with bycatch and discard species. The FY 2009 Hook Sector direct and indirect impacts on bycatch and discard species is expected to be "positive" compared to the Common Pool fishery.

5.2.4.4 Protected Resources

The direct and indirect effects of the FY 2009 Hook Sector operations on protected resources was previously summarized in Section 5.1.1.4. The TAC and DAS ensures that only a fixed amount of fishing occurs, thereby limiting interaction with protected resources. Exemption from the landing limit for cod would allow vessels to operate more efficiently and possibly could reduce fishing time due to the achievement of the TAC. Gear restrictions require that Hook Sector members would only pursue groundfish with hook-and-line gear. An exemption from the hook limit may result in an increased amount of hook gear used, however impacts on protected species would be minimal as hook gear is known for minimal interactions with protected resources. Though full retention of legal-sized GB cod makes fishing more efficient, the redistribution of monthly quota results in a negligible impact protected resources. Through daily communication with the Hook Sector members, the Manager has the ability and authority to implement further gear restrictions if interactions with protected species cannot be avoided. This situation has yet to occur, but can be promptly accommodated if it does. By allowing exemption from the May spawning closure, Hook Sector fishermen were allowed an opportunity to pursue GB cod without having to compete with larger vessels and more efficient gear

types. Exemption from the hook limit was used on a large portion of the trips taken, which allowed Hook Sector members to take advantage of natural fluctuations in GB cod availability; however, mandatory circle hook use and minimum hook size limits allow for increased survivability, based on previous collaborative research. In summary, the direct and indirect effects of the FY 2009 Hook Sector Operations Plan are expected to have positive impacts on protected resources.

5.2.4.5 Human Communities

The direct and indirect effects of the FY 2009 Hook Sector Operations Plan on human communities were previously summarized in Section 5.1.1.5. Both Sectors and SAPs can partially mitigate the negative social and economic impacts of effort reductions associated with on-going rebuilding timeframes. Based on these regulations, past performance of the Hook Sector, and the overall-minimal but locally-substantial positive socio-economic benefits gained by Hook Sector participation, approval of the Operations Plan would provide safety benefits as well as regulatory flexibility that would allow cooperative harvest and the maximization of economic opportunity. Approval of the Operations Plan and allocation of GB cod would allow the Hook Sector the flexibility it needs to maximize revenues while minimizing expenses in the short term. It would allow Chatham/Harwichport to remain in the commercial groundfish business and benefit from the rebuilding of the groundfish resource. Overall, the direct and indirect effects of the FY 2009 Hook Sector Operations Plan would have positive social impacts for the human communities of GB Fixed Sear Sector and the Chatham/Harwichport area.

5.3 Summary of Cumulative Effects

The Cumulative Effects resulting from the implementation of the FY 2009 Hook Sector Operations Plan and the Cumulative Effect Assessment (CEA) Baseline are summarized in Table 5.12.

Physical Environmental/Habitat: While reductions in fishing effort as a result of past fishery management actions is thought to have had a positive impact on habitat and EFH, 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 “low negative” to “negligible” as the potential for localized harm to VECs exists. Upon reaching their respective TACs, the Hook Sector and the Fixed Gear Sector completely cease effort with gear capable of catching GB cod. In that (somewhat unlikely) instance, sector vessels would reduce/eliminate chances for interactions with habitat. Importantly, Hook Sector gear is considered to have minimal interactions with habitat. The sum of effects from implementation of sector operations is expected to be positive for habitat.

Allocated Species and Other Landed Species: A major goal of the NE Multispecies FMP is to allow for the rebuilding of stocks and therefore, with continued management actions, they should have a “positive” impact on allocated species and other landed species. The effects from non-fishing actions are expected to be “low negative” to “negligible” as the potential or localized harm to VECs exists. Overall, the approval of

the Hook Sector would have positive impacts on allocated species and other landed species stocks. Approval of the FY 2009 Hook Sector would bring accountability (through a hard TAC, utilization of low-impact hook-and-line gear, and increased monitoring and reporting requirements) to fishermen in Chatham and Harwichport, MA. The sum of the effects from implementation of sector operations and CEA Baseline is expected to be positive for allocated species and other landed species.

Bycatch and Discard Species: 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 to negligible as the potential for localized harm to VECs exists. Upon reaching their respective TACs (however unlikely), the Hook Sector completely ceases effort with gear capable of catching GB cod. In that instance, sector vessels would reduce/eliminate chances for interactions with bycatch and discard species. Furthermore, gear restrictions imposed upon both Sectors and the Common Pool fishery is designed to minimize interactions with bycatch and discard species. The sum of the effects from implementation of sector operations and CEA Baseline is expected to be positive for bycatch and discard species.

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. The effects from non-fishing actions are also expected to be low negative to negligible as the potential for localized harm to VECs exists. Upon reaching their respective TACs, the Hook Sector and the Fixed Gear Sector would completely cease effort with gear capable of catching GB cod. In that instance, Sector vessels would reduce/eliminate chances for interactions with protected species. Furthermore, hook gear (approved for both Sectors) is considered to have minimal interactions with protected species. The sum of the effects from implementation of sector operations and CEA Baseline is expected to be positive for protected resources relative to the Common Pool fishery.

Because of the allowed and continued use of all Common Pool fishery gear types, the No Action Alternative would increase the potential for interaction with protected resources when compared to the Preferred Alternative. Specifically, the Common Pool adds trawl gear that the Sector cannot use. Trawl gear fall under a Category II fishery category (Table 5.6) resulting in occasional incidental mortality and serious injury of marine mammals. Correspondingly, the Sector uses gillnets, which are a Category III fishery (i.e., a commercial fishery determined by the Assistant Administrator to have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals; Table 5.6). Thus, gillnet gear used by the Sector is anticipated to yield less injuries to marine mammals relative to trawls used in the Common Pool fishery.

Human Communities: Past management actions have had a negative impact on communities, including Chatham and Harwichport, MA, which 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 13 and proposed Amendment 16 rebuilding plan. The effects from non-fishing actions are also expected to be low negative to negligible as the potential for localized harm to VECs exists. However, sector management has offered socio-economic relief to Sector participants, especially to a hook-and-line fleet that was headed to extinction. The SAP has also helped the human communities involved. The Sector management will need to continue refining Harvest Rules in order to allow Sector member to achieve maximum efficiency and flexibility while at the same time remaining consistent with the rebuilding programs for stocks. In the short-term negative socio-economic impacts are being felt throughout the region, but long-term benefits are anticipated once the groundfish stocks can be harvested at a sustainable level. Additionally, 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. The sum of effects from implementation of sector operations is expected to be positive for human communities.

Table 5.12. Cumulative Effects Resulting from Approval of the FY 2009 Hook Sector Operations Plan and CEA Baseline. L(-) means the action has a slightly negative effect on the VEC.

Cumulative Effect Baseline

	Biological Impacts			Habitat Impacts	Human Community Impact	
	Allocated Species/ Other Landed Species	Bycatch/ Discards	Endangered/ Protected Species	Habitat	Ports Chatham/ Harwich	Fixed Gear Sector Participants
Effects of Past, Present, and Reasonably Foreseeable Future Fishing Actions (see Table 5.9)	(+)	(+)	(+)	(+)	(-)	(-)
Effects of Future Operations of Georges Bank Cod Fixed Gear Sector (see Table 5.10)	(+)	(+)	(+)	(+)	(+)	(+)
Effects of Past, Present, and Reasonably Foreseeable Future Non-Fishing Actions (see Table 5.11)	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)	Overall L(-)
Direct and Indirect Effects of Proposed Sector Operations (see Table 5.1)	(+)	(+)	(+)	(+)	(+)	(+)
Cumulative Effects Sum of Effects from implementation of sector operations and CEA Baseline	(+)	(+)	(+)	(+)	(+)	(+)

6.0 LIST OF PREPARERS AND POINTS OF CONTACT

This document was prepared through the cooperative efforts of staff members of Lighthouse Technical Consultants, Inc. (LTCI); the Cape Cod Commercial Hook Fishermen's Association (CCCHFA); and National Marine Fisheries Service (NMFS).

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7.0 PERSONS AND AGENCIES CONSULTED

The Northeast Regional Office (NERO) of the National Marine Fisheries Service (NMFS), National Oceanic & Atmospheric Administration (NOAA); and the New England Fishery Management Council (NEFMC) Staff were consulted in preparing this Environmental Assessment (EA).

8.0 COMPLIANCE WITH APPLICABLE LAWS AND EXECUTIVE ORDERS

This section reviews the Georges Bank (GB) Hook Sector's compliance with Applicable Laws and Executive Orders.

8.1 Magnuson-Stevens Fishery Conservation and Management Act

This action is being taken in conformance with the Northeast (NE) Multispecies Fishery Management Plan (FMP), which requires that an Environmental Assessment (EA) of the GB Cod Hook Sector Operations Plan be prepared in compliance with National Environmental Policy Act (NEPA), Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act) and other applicable laws and executive orders. Amendment 13 to the (FMP) established the sector operations plan approval process; this Amendment was approved on April 27, 2004 and was found to be fully in compliance with all national standards and other required provisions of the Magnuson Act. Nothing in this action changes the findings in Amendment that this action complies with the Magnuson Act.

8.2 Endangered Species Act (ESA)

For actions with potential impacts on endangered/threatened species, for which a Biological Opinion is being prepared, or for which an informal consultation is likely: Section 7 of the ESA requires federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. National Marine Fisheries Service (NMFS) has concluded that the fishing year (FY) 2009 GB Cod Hook Sector Operations Plan and the prosecution of the associated sector is not likely to either result in jeopardy to any ESA-listed species under NMFS' jurisdiction or alter or modify any critical habitat, based on the discussion in this document. For further information on the potential impacts of the fishery and the proposed management action, see Section 5.1.1.4 of this document. Once this document is submitted, it is expected that NMFS would initiate an informal/formal consultation on this action under Section 7 of the ESA.

8.3 Marine Mammal Protection Act (MMPA)

NMFS has reviewed the impacts of the FY 2009 GB Hook 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 units of the subject fisheries. For further information on the potential impacts of the fishery and the proposed management action, see Section 5.1.1.4.

8.4 National Environmental Policy Act

National Oceanic and Atmospheric Administration Administrative (NOAA) 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 state 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 the target species (GB cod) affected by the action because the GB Cod Hook Gear Sector has a hard total allowable catch (TAC) for GB cod that is a portion of the target TAC for GB cod established by the NE Multispecies FMP and that would be adhered to on an annual basis. The biological impacts of the proposed action are analyzed in Section 5.1.1.2.

- 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-target species. Mortality of non-target species would be controlled within the GB Cod Hook Sector (Hook Sector) by continued use of Days-at-Sea (DAS) (Sections 5.1.1.2 and 5.1.1.3).

- 3) *Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson Act and identified in FMPs?*

Response: The Proposed Action is not expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson Act and identified in the FMP. The fixed gear used by Hook Sector members in the proposed action has minimal adverse impacts on marine habitats or EFH. Mobile, bottom-tending gear, including bottom trawl gear, have much greater impacts on bottom habitats; the Proposed Action will prevent fishermen who participate in the Sector from using trawls, which will result in positive impacts on EFH and coastal habitats compared to the No Action alternative (Section 5.1.1.5).

- 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 Hook Sector involves routine fishing operations and would not decrease safety at sea. In fact, it is expected that the centralized and local controls placed on the Hook Sector would result in positive impacts on public health and safety. This would occur through daily monitoring and

increased communication among Hook Sector members, and the ability to respond rapidly to changing weather developments (Section 5.1.1.5).

- 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 increased adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species. Fixed gear use within the Hook Sector is not expected to increase interference with threatened species, marine mammals, or their habitat. By mandating the retention of all legal-sized GB cod and by operating under a hard TAC rather than a daily trip limit, the Hook Sector may be able to harvest their allocation of GB cod more efficiently and in less time. By increasing this efficiency, gear could remain in the water less time than it would under Common Pool rules, thereby reducing the potential interactions with protected species (Section 5.1.1.4).

- 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 Operations Plan would cap the maximum amount of effort within the Hook Sector. As a result, the biodiversity and ecosystem impacts common to the Common Pool fleet would not expand (Sections 5.1.1.1 through 5.1.1.4).

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

Response: The social and economic impacts of the Proposed Action are not interrelated with significant natural or physical environmental effects. As discussed in the EA, no significant social, economic, or biological effects are expected as a result of this project (Section 5.1.1.6).

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

Response: The implementation of the Hook Sector was approved by a majority of the New England Fisheries Management Council (NEFMC). The Hook Sector is the first GB cod sector in New England that voluntarily fishes under a hard TAC of GB cod. Through the promotion of hard TACs as an alternative to DAS, the Hook Sector draws some controversy. However, healthy discussions revolving around alternative forms of management allow for the NEFMC to more informatively and effectively manage its fisheries. Additionally, the proposed management action is not expected to negatively impact target species, non-target species, habitat or protected resources as described in Sections 5.1.1.1 through 5.2.1.5.

9) *Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?*

Response: There are no known historic or cultural resources, park land, prime farmlands, wetlands, or wild scenic rivers in the study area. All bottom-set, longlines are considered fixed and passive because once deployed the gear does not move.

10) *Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?*

Response: The GB Cod Hook Sector Operations Plan would mitigate impacts of Amendment 13 and Framework 42 to the NE Multispecies FMP on human communities by conveying environmental, social, and economic benefits directly to the Hook Sector members and thereby to the communities of Chatham and Harwichport. The effects of the proposed action on the human environment are not expected to be highly uncertain or involve unique or unknown risks (Section 5.1.1.1 through 5.1.1.6).

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

Response: The proposed action is not related to other actions with individually insignificant, but cumulatively significant impacts. None of the cumulative impacts of the Proposed Action are considered significant, nor are impacts of recent (since Amendment 13) management actions. Therefore, the Proposed Action would not have any significant impacts when considered individually or in conjunction with other actions (fishing related and non-fishing related) (Sections 5.2.1 and 5.2.2).

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: There are no adjacent human communities geographically adjacent to the operating area that would be affected by the GB Cod Hook Sector Operations Plan. 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, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. Due to the minimal impact on the human environment, the effect of the GB Cod Hook Sector Operations Plan would not be significant on 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 Hook Sector is confined to a traditional fishing area, the GB Cod Hook Sector Area (Section 3.1.2). Therefore, introduction or spread of non-indigenous species is minimized.

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 Sectors under Amendment 13 to the NE Multispecies FMP and has set forth criteria for establishing Sectors in that action. The Proposed Action was initiated in response to Amendment 13. The Proposed Action does not set a precedent because it abides by the criteria set forth in Amendment 13. However, it should be noted that while Amendment 13 established the process for Sector allocation, each sector proposal is considered individually on its own merits and expected impacts, and include a specified process for public comment and 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 GB Cod Hook Sector Harvest Rules, the Hook 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 5.2.1 and 5.2.2, 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 FY2009 GB Cod Hook Sector Operations Plan, it is hereby determined that the approval of the FY2009 GB Cod Hook 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, NOAA

Date

8.5 Administrative Procedure Act

Section 553 of the Administrative Procedure Act establishes procedural requirements applicable to informal rulemaking by Federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process and to give the public adequate notice and opportunity for comment. At this time, 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. This action does not propose to modify any existing collections or to add any new collections; therefore, no review under the PRA is necessary.

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), and in accordance with regional consistency determination provision codified at § 930.36(e), NMFS has sent a single general consistency determination that addresses the commonalities and differences of each state's enforceable policies to the following states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, and North Carolina; on February 8, 2008. In accordance with that determination, NMFS has sent a letter advising those states of this action.

8.8 Information Quality Act

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

Utility

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

The Federal Register notice that announces the proposed Operations Plan and GB Cod Hook Sector Agreement would be made available in printed publication and on the NMFS Northeast 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 Office of Management and Budget (OMB) Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity

For the purposes of the Pre-dissemination Review, this document is considered to be a "Natural Resource Plan." Accordingly, the document adheres to the published standards of the Magnuson 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 of the Northeast Fisheries Science Center. Landing information is based on information collected from the GARM II and GARM III reports. These reports are developed using an approved, scientifically valid sampling process. In addition to these sources, additional information is presented that has been accepted and published in peer-reviewed journals or by scientific organizations. Original analyses in this document were prepared using data from accepted sources, and the analyses have been reviewed by 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, FY 2007, and supplemented by data available for the current Fishing Year, FY 2008. 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 September 2008. 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 Hook Sector and the socio-economic impacts of the fisheries on impacted communities.

The policy choices are clearly articulated, in Section 3.0 of this document, as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are summarized and described in Sections 4 and 5 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the 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 document 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 OMB.

8.9 Regulatory Impact Review

Description of the Management Objectives

The NEFMC has authorized the formation of Sectors under Amendment 13 to the NE Multispecies FMP and has set forth criteria for establishing Sectors in that action. The

Hook Sector, approved and implemented under Amendment 13, provides the specific details for how the Sector would function and is required to finalize formation of the Sector. However, the NMFS Regional Administrator must, on an annual basis, approve the Hook Sector's Operations Plan and Agreement. For specific Goals and Objectives to the Amendment, and to see specific goals for the Hook Sector, please refer to Section 2.2 of the EA. Additionally, Hook Sector objectives must take into account the requirements of multiple laws and mandates, including Magnuson Act, ESA, MMPA, CZMA, NEPA, APA, QRA, IPA, and EOs 13132, 13158, and 12898.

Description of the Affected Entities

The Hook Sector is a group of 24 self-selecting, small, day boat hook fishermen that have come together voluntarily and cooperatively for the purposes of efficiently harvesting an annual allocation of GB cod. Each business qualifies as a Small Business under the Small Business Administration (SBA). The Hook Sector would operate under a hard TAC of GB cod consistent with the NE Multispecies FMP and the overfishing mandates of the Sustainable Fisheries Act (SFA) amendment to the Magnuson Act. The Hook Sector participants land GB cod as a primary species, but have had to diversify their fishing businesses to catch other groundfish, monkfish, and skates. They operate year-round, but most intensely from the late spring to late fall. They would operate within the GB Cod Hook Sector Area, defined in Section 3.2.1 in the EA, and would be legally bound to adhering to the Hook Sector's Harvesting Rules, outlined in Section 3.1.4 of the EA.

Statement of the Problem

Current and future regulations would end overfishing and initiate rebuilding plans for overfished stocks in the groundfish complex, as well as minimize bycatch and protect habitat. These regulations would also bring about many positive environmental changes and increased revenue in the long-term, but would likely result in social and economic costs for the New England groundfish fleet in the short-term. Additionally, input control management measures have diminished other fleets in the GOM and on GB. Low trip limits and a diminished GB cod stock status have severely undermined the ability of the GB fixed gear fleet to remain economically viable.

The Hook Sector would allow members to economically survive and prosper as stocks rebuild. In addition, the Hook Sector would provide a model for other New England day boat fleets that seek alternative management options. The Hook Sector represents an opportunity for fishermen to lead the way in promoting conservation and stewardship of the resources on which they depend. Authorization of the Hook Sector would provide a vehicle to mitigate many of the negative economic and social impacts of Amendment 13 and FW 42. Likewise, full implementation of the GB Cod Hook Sector Operations Plan would establish additional means to generate social, economic, and environmental efficiencies. Authorization of the Hook Sector would initiate a viable framework for GB fixed gear vessels to alleviate social and economic hardships while meeting the biological objectives of Amendment 13 and FW 42. For further analysis, please refer to Section 5.2.3.5 of the EA.

Description and Economic Analysis of Each Selected Alternative

Alternative 1, the Preferred Alternative, is approval of the 2009 GB Cod Hook Sector Operations Plan and receipt of an allocation of GB cod for FY 2009. Hook Sector vessels would be subject to the regulations implemented under the Harvesting Rules (please see Section 3.1.4 of the EA). In addition to the Operations Plan, Hook Sector members are subject to a legally binding Membership Agreement that delineates the interaction of members within the Hook Sector, including governance, enforcement, and penalties for noncompliance.

Alternative 1 would provide social benefits to the Hook Sector members as well as to the Chatham/Harwichport, Massachusetts, communities, which, according to the AM13 FSEIS, are more than 71 percent revenue-dependent on groundfish stocks, particularly GB cod. The Hook Sector Operations Plan allows a range of management measures that would make the Hook Sector economically viable for fixed gear fishermen. The Amendment 13 Final Environmental Impact Statement (FEIS) concluded that negative distributional impacts affecting Chatham/Harwichport in Amendment 13 are mitigated by Hook Sector allocation: “The proposed action does include some measures designed to mitigate these distributive impacts. The sector allocation and special access programs are specifically designed to foster ways to target healthy stocks to mitigate some of these distributional impacts. For further economic analysis, please refer to Section 5.2.3.5 of the EA.

Alternative 2, the No Action Alternative, is the disapproval of the Hook Sector Operations Plan and no submission of a modified Operations Plan. While the Hook Sector would be available under the No Action Alternative, all vessels would remain in the Common Pool and fish under the regulations implemented in Amendment 13 and subsequent framework adjustments to the NE Multispecies FMP. Therefore, no allocation of GB cod would be made to the Hook Sector.

Alternative 2 would have negative social impacts on local fixed gear fishermen and on the Chatham/Harwich community. The daily GB cod trip limit, in addition to reduced DAS, gear restrictions, and Closed Areas, would continue to impact the proposed members of the Hook Sector. As noted in the Report from the Groundfish Social Impact Informational Meetings (NEFMC 2001), because of increased regulations, small vessels lose flexibility to diversify their businesses by participating in multiple fisheries because of increased regulations. In Chatham, meeting participants felt that regulations have ‘boxed them in’ to particular fisheries, making it difficult or impossible for them to maximize their opportunities and/or adjust to changing conditions. When combined with the inherent limitations of small vessels, the regulations have reduced fishing opportunities to the point that many fishermen cannot guarantee a year-round income from fishing for themselves or for their crew. For further economic analysis, please refer to Section 5.2.3.5 of the EA.

Conclusions

Amendment 13 and FW 42 to the NE Multispecies FMP, as passed by the NEFMC and approved by NMFS, are having severe, disproportional negative economic impacts on the GB fixed gear fleet. Compared with the No Action Alternative, Alternative 1 would have positive social impacts for the proposed members of the Hook Sector and the Chatham/Harwichport area. Implementation of the Operations Plan would provide safety benefits (by encouraging Sector members to avoid older vessels, which are more likely to break down, and bad weather; see Section 5.1.1.5) as well as regulatory flexibility that would allow cooperative harvest and the maximization of economic opportunity. Implementation of the Operations Plan and allocation of GB cod would allow the Hook Sector the flexibility it needs to maximize revenues while minimizing expenses in the short term. It would allow Chatham/Harwichport to remain in the commercial groundfish business and benefit from the rebuilding of the groundfish resource. For further conclusions, please refer to Sections 5.2.1.5 and 5.2.2.5 of the EA.

8.10 Regulatory Flexibility Act

The Regulatory Flexibility Act (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, as required of the RFA, of the proposed action. 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 Initial Regulatory Flexibility Analysis (IRFA) 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 is 23 vessels, each of which would be considered a small entity, based on the definition as stated above. The economic impact resulting from this action on these small entities is positive since the action would mitigate the disproportionate negative impacts of Amendment 13 on the Chatham/Harwichport fixed gear fleet.

Description of the Reasons Why Action by Agency is being, Considered

The specification of a hard TAC of GB cod is necessary to limit GB cod mortality by the Hook Sector. Limitation of fishing mortality enhances management of such stocks and is consistent with the NE Multispecies FMP for GB cod. Upon approval of the Operations Plan, the Hook Sector would be one of two groups of fishermen fishing under a hard TAC for GB cod, ensuring that their catch of GB cod is constrained despite exemptions

from some effort control provisions of the NE Multispecies FMP. Further description of the purpose and need for the TACs 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 continued operations of the Hook Sector in FY 2009, and to allow the benefits of sector operations to accrue to 23 proposed members and the communities of Chatham and Harwichport. The legal basis for the Proposed Action is the NE Multispecies FMP and promulgating regulations at 50 CFR §§ 648.87(b.)

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 TAC is approximately 1,000 vessels: the approximate number of vessels in New England with limited access multispecies DAS permits and an allocation of Category A or B DAS. Realistically; however, the number of vessels that would chose to fish in the Hook Sector would be substantially less than 1,000 vessels. Therefore, those vessels subject to the restrictions associated with the TACs would be substantially less than 1,000 vessels. The number of vessels who anticipate participating in the Hook Sector in FY 2008 is 23.

Reporting, Recordkeeping and Other Compliance Requirements

The proposed action mandates reporting requirements that are as stringent as, or more so, than current Federal regulations. Hook Sector reporting and recordkeeping regulations do not exempt participants from state and federal reporting and recordkeeping, but are mandated above and beyond current State and Federal requirements. A full list of compliance requirements can be found in the GB Cod Hook Sector Operations Plan.

Duplication, Overlap or Conflict with other Federal Rules

The proposed action that would be allowed under this action was approved as part of Framework (FW) 42 to the NE FMP (71 FR 62156, October 23, 2006), authorized by the NEFMC and approved by NMFS. 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 Preferred Action would create a positive economic impact for the Participating Vessels because it would mitigate the negative, disproportionate impacts of Amendment 13 and ensuing Frameworks on the Chatham/Harwichport fixed gear fleet. At this time, due to the fact that Sector management is relatively new to New England

groundfish management, little quantitative data on the precise economic impacts is available. However, for FY 2007, Sector members exceeded the 1,000-lb trip limit for cod on 41 trips. On those trips, they caught 118,429 lbs of cod, resulting in 77,429 lbs of cod that they couldn't have landed if they were operating with a daily trip limit. The economic impacts are also qualitatively present: by coming out from under the inefficient input controls of the current management regime and by operating under both a hard TAC and DAS, Sector members would remain economically viable while adjusting to changing economic and fishing conditions. Thus the Preferred Alternative 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 proposed action would affect 23 commercial fishing vessels from Chatham and Harwichport that have voluntarily joined the Hook Sector for FY 2009. In FY 1999 and FY 2000, Chatham and Harwichport averaged 5,980,850 pounds of groundfish landings and \$7,254,100 in groundfish revenues, establishing it as an important port of landing for groundfish vessels. These ports are also a primary port for the multispecies fishery, and during the same period an average of 95 multispecies vessels homeported in Chatham/Harwichport, generating \$6,844,500 in revenues from multispecies (NEFMC 2003). Chatham's overall community dependence on multispecies as a percentage of total fisheries revenues from Federally-permitted vessels averaged about 71 percent from FY1999–FY2000. It is likely that at least some of the active groundfish vessels in Chatham and Harwichport are even more than 71 percent dependent on the multispecies fishery. Economic analyses of the Hook Sector are in progress at the time of writing, and anticipate being included in future Hook Sector documents.

Sector allocation is cited repeatedly as a measure to mitigate economic harm caused by Amendment 13, and to ensure a viable fishing industry that may be able to develop more efficient means to harvest a portion of the resource. Furthermore, it allows for some degree of flexibility to be able to offset a portion of any profit losses by increasing efficiency and reducing overhead costs. The GB Cod Hook Sector Operations Plan allows a range of management measures that would make the Sector economically viable for fixed gear fishermen.

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