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

JUL 9 2010

To All Interested Government Agencies and Public Groups:

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

TITLE: Emergency Action to Revise the Fishing Year 2010 Pollock Catch Limits in the Northeast Multispecies Fishery

LOCATION: Exclusive economic zone off the U.S. East Coast.

SUMMARY: An emergency action was developed to revise the fishing year 2010 pollock catch limits in the Northeast Multispecies Fishery. Revision to the pollock catch limits for fishing year 2010 is warranted based upon a new stock assessment for pollock (June 2010). This action was initiated based upon preliminary information, prior to completion of the stock assessment process in order to expedite the implementation of changes to catch limits.

RESPONSIBLE
OFFICIAL: George H. Darcy
Assistant Regional Administrator for Sustainable Fisheries
National Oceanic and Atmospheric Administration (NOAA)
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930-2276
(978) 281-9315

The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact (FONSI), including the environmental assessment, is enclosed for your information.

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

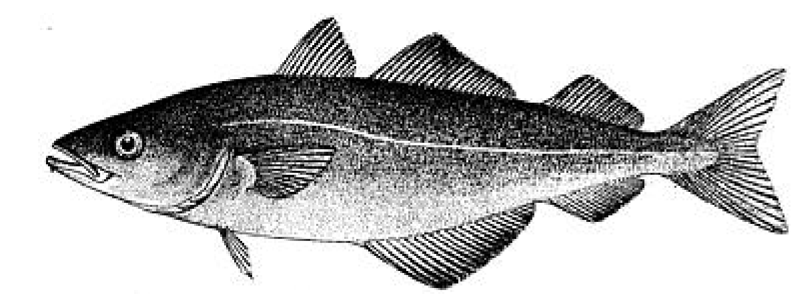
Sincerely,

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

Enclosure

Northeast Multispecies Fishery Management Plan

Secretarial Emergency Action to Revise Fishing Year 2010 Catch Limits for Pollock



Pollachius virens

Environmental Assessment

Prepared by the National Marine Fisheries Service
Northeast Regional Office
55 Great Republic Drive Gloucester, MA 01930-2276

July 7, 2010

1.0 Executive Summary

The Secretary of Commerce (Secretary) finds that emergency action, under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), is necessary to revise the fishing year (FY) 2010 catch limits for pollock, managed by the Northeast (NE) Multispecies Fishery Management Plan (FMP). The principal goal of this emergency action is to respond to recent scientific information. Information resulting from a benchmark stock assessment for pollock (SAW 50 Pollock Assessment, June 2010) indicates that the pollock stock is not overfished and overfishing is not occurring and, therefore, the FMP should be revised in order to incorporate and respond to such information. This Environmental Assessment (EA) analyzes the environmental impacts of an emergency action, which compares alternatives, as required under the National Environmental Policy Act (NEPA) to quickly respond to this recent scientific information until such time that the New England Fishery Management Council (Council) can incorporate the new information into the FMP.

Specifically, this emergency action will implement the following actions for pollock, described in more detail below: (1) Revise the pollock stock status determination criteria; (2) revise the pollock Overfishing Level (OFL), Acceptable Biological Catch (ABC) and Annual Catch Limits (ACLs); and (3) specify the pollock ACLs.

This emergency action was initiated by NOAA's National Marine Fisheries Service (NMFS) based on information, prior to completion of the pertinent stock assessment process (i.e., prior to issuance of final report of peer review) in order to expedite the implementation of any changes to the catch limits. Expedited implementation was determined to be justified due to the likelihood that the final results of the stock assessment would result in greater catch limits of pollock and the economic relief that this information would provide to industry stakeholders. This Environmental Assessment was completed prior to the completion of the final report from the stock assessment, based upon the draft conclusions of the Stock Assessment Review Committee, which constituted the best available science at the time the EA was written. Final implementation of this action will not occur until after finalization of the stock assessment report, and is contingent upon the conclusions of the stock assessment.

Pursuant to the MSA, management measures were implemented in the FMP on May 1, 2010, to ensure that catch in the fishery does not exceed the respective ACLs for each groundfish stock (i.e., accountability measures (AMs)). To that end, during the fishing year, the Regional Administrator may implement restrictive inseason measures to prevent the catch of pollock from exceeding the ACL or may liberalize measures in order to allow the catch of pollock to attain, but not exceed the ACL. If the common pool catch exceeds the ACL in FY 2010, accountability measures in the form of day-at-sea (DAS) restrictions will be implemented during the following fishing year (FY 2011).

Similarly, vessels fishing in Sectors must cease fishing if/when their annual catch entitlement (ACE) for pollock is reached. If a Sector catch exceeds its FY 2010 ACE for pollock, the amount of over-harvest will be deducted from the Sector in FY 2011.

Framework Adjustment (FW) 44 to the FMP implemented the following FY 2010 catch limits for pollock: 3,293 mt, 3,148 mt, 47 mt, and 2,701 mt (ABC, total ACL, preliminary common-pool sub-ACL, and preliminary sector sub-ACL, respectively). The catch levels for sectors and the common pool were revised in a subsequent action (75 FR 29459, May 26, 2010) as a result of vessels dropping out of sectors (62 mt and 2,686 mt; common-pool sub-ACL and sector sub-ACL, respectively). Because the FW 44 catch limits for pollock represent substantial reductions from recent catch levels and, in light of the FMP measures that make the fishery accountable for catch (as described above), there likely would be reductions in fishing effort as a result of the pollock catch during the first trimester of FY 2010.

Emergency action to revise the pollock catch limits based on the stock assessment results provides timely incorporation of scientific information and enables the fishery to remain open longer. Immediate regulatory action precludes potential disruptions in the fishing industry and substantial loss of income. The EA analyzes 2 alternatives: No Action and the Preferred Alternative. The Preferred Alternative allocates additional pollock to the fishery. Table 1 below contains the revised status determination criteria and catch specifications for FY 2010.

Table 1. Revised Pollock Status Determination Criteria and Catch Levels for FY 2010

Parameter or Catch Level	Fishing Year 2010 Value
Status Determination Criteria: Bmsy (biomass associated with maximum sustainable yield)	91,000 mt (Bmsy proxy, expressed in spawning stock biomass)
Status Determination Criteria: Fmsy (fishing mortality associated with maximum sustainable yield)	0.25 (Fmsy proxy, $F_{40\%}$)
Overfishing Level (OFL) of Catch	25,200 mt
Acceptable Biological Catch (ABC)	19,800 mt
State Waters ACL subcomponent	1,188 mt
Other ACL subcomponent	1,188 mt
Groundfish sub-ACL	16,553 mt
Sector sub-ACL	16,178 mt
Common Pool sub-ACL	375 mt
Incidental Catch TAC	7.5 mt

Summary of Environment Consequences

The revision to the Status Determination Criteria and ACLs align current management measures with the best available scientific information. Revision to the FY 2010 catch limits will result in the opportunity for substantially greater amounts of pollock catch than under the No Action Alternative. The revised level of pollock catch for FY 2010 is consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). Both scientific and management uncertainty are accounted for in this catch level, so the risks of negative biological impacts have been minimized. A larger catch limit for pollock may result in greater fishing effort and greater catch of other stocks in addition to pollock, as compared to the No Action Alternative, because pollock will no longer serve as a constraining stock. The impacts of the Preferred Alternative on protected resources will likely track the current trend in fishing effort. That is, an effect of an increase in fishing effort on pollock as a result of this action, compared to the No Action Alternative, would be to increase slightly the interactions of groundfish gear with protected resources. The scope of this increase with respect to the overall fishery is expected to be negligible. Similarly, for essential fish habitat (EFH), an effect of an increase in fishing effort on pollock, compared to the No Action Alternative, would be to increase slightly the interactions of groundfish gear with EFH. The scope of this increase with respect to the overall fishery is expected to be negligible.

The increased pollock ACL under this emergency action would represent an increase of potential revenue of approximately $15 million, assuming recent average prices for pollock, and assuming that all available pollock would be harvested. This estimate of pollock revenue is likely high, given the level of recent pollock landings. However, the economic impact of the revised 2010 pollock ACL may be greater than the revenue associated with pollock landings, because the current groundfish ACL of 2,748 mt is expected to constrain many sectors from utilizing ACE for other stocks, and could result in either an in-season adjustment to the common pool measures or a trigger of the common pool AM. Therefore, the primary economic benefit of the revised ACL is expected to be associated with reducing the likelihood that an AM would be triggered for the common pool, and for sectors, and relaxation of a potential barrier to obtaining higher utilization of economic yield from other stocks. Assuming that a similar proportion of the allowable fish are caught and that a similar selectivity would occur as in recent years, the total groundfish revenue under the Preferred Alternative (including all groundfish stocks) would be $77.9 million, compared to $63.0 million under the No Action Alternative. With respect to sector allocations, under this emergency action, two sectors would still be left with less pollock ACE than the collective sector membership landed during FY 2008. Similarly, approximately 16% of permits that joined a sector would have less pollock than they landed during FY 2008.

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2.0 Background, Purpose, and Need

2.1 Background

The primary statute governing the management of fishery resources in the U.S. EEZ is the Magnuson-Stevens Act (MSA). In New England, the New England Fishery Management Council (Council) is responsible for developing FMPs that comply with the MSA and other applicable laws. Section 303 of the MSA requires that each FMP contain management measures that prevent overfishing and rebuild overfished stocks. Overfishing is occurring when the fishing mortality on a particular stock exceeds the fishing mortality threshold. A stock is overfished if the stock biomass is below the biomass level of a fully rebuilt stock, which is the biomass that can produce maximum sustainable yield (MSY), generally ½ B_{MSY} or its proxy. These status determination criteria are defined for each stock managed by a FMP and are used to evaluate the success of a management program.

The NE Multispecies FMP specifies the management measures for 13 species in Federal waters off the New England and Mid-Atlantic coasts, which are defined as Atlantic cod, haddock, yellowtail flounder, pollock, American plaice, witch flounder, white hake, windowpane flounder, Atlantic halibut, winter flounder, ocean pout, redfish, and Atlantic wolffish, comprising a total of 20 individual stocks. This FMP was originally implemented in 1977 and has continued to evolve through a series of framework adjustments and amendments (implemented through Federal regulations) that have implemented management measures in an attempt to prevent overfishing and rebuild overfished stocks.

The most recent revision to the FMP occurred in May 2010, with the implementation of Amendment 16. Amendment 16 established rebuilding programs for groundfish stocks newly classified as being overfished and subject to overfishing; revised measures necessary to end overfishing; mitigated adverse economic impacts of increased effort controls, including authorization of 17 new groundfish sectors (in addition to the two existing sectors); and implemented FMP requirements and methods for establishing ABCs, ACLs, and AMs for each stock.

Consistent with the MSA and pursuant to the methods for the development of catch limits developed in Amendment 16 to the FMP, the Council developed catch limits, which were also implemented on May 1, 2010, through FW 44 to the FMP. The Council's Scientific and Statistical Committee (SSC) and the Plan Development Team (PDT) were the two technical bodies involved in the development of that action. The Council submitted the FW 44 document to NMFS on January 15, 2010. NMFS published proposed and final rules for FW 44 in the Federal Register on February 1, 2010 (75 FR 5016), and April 9, 2010 (75 FR 18356), respectively. FW 44 was effective on May 1, 2010, the start of FY 2010, and specified the various catch limits for all stocks covered by the FMP, including pollock, for FYs 2010 through 2012. FW 44 also implemented other measures that are not directly relevant to this emergency action, and are therefore, not described here. The catch levels specified by FW 44 included OFLs, ABCs, ACLs, ACL components, and incidental catch Total Allowable Catches (TACs) for special management programs. The ACL components included sub-ACLs for the common pool and Sectors.

The OFL value for a stock is calculated using the estimated stock size for a particular year, and represents the amount of catch associated with Fmsy, i.e., the fishing mortality rate that, if applied over the long term, would result in maximum sustainable yield (MSY). The

ABCs are those recommended by the SSC, and are lower than the OFLs in order to take into account scientific uncertainty in setting catch limits. The ABC value for a stock is calculated using the estimated stock size for a particular year and, for all stocks with the exception of SNE/MA winter flounder, represents the amount of catch associated with 75 percent of Fmsy, or the F rate required to rebuild the stock within the defined rebuilding time period (Frebuild), whichever is lower.

The Council recommended ACLs that are lower than the ABCs, in order to account for management uncertainty, consistent with the national standard guidelines (74 FR 3178; January 16, 2009). Thus, the total ACL for a stock represents the catch limit for a particular year, considering both biological and management uncertainty, and includes all sources of catch (landed and discards) and all fisheries (commercial and recreational groundfish fishery, state-waters catch, and non-groundfish fisheries). The division of a single ACL value for each stock (for a particular FY) into sub-ACLs and ACL-subcomponents is done to account for all components of the fishery and sources of fishing mortality.

For FW 44, the ABC was sub-divided into fishery components on a stock-specific manner, prior to the consideration of management uncertainty. The following components of the fishery are reflected in the total ABC: Canadian share/allowance (expected Canadian catch); U.S. ABC (available to the U.S. fishery after accounting for Canadian catch); state waters (portion of ABC expected to be caught from state waters outside Federal management); other sub-components (expected catch by other non-groundfish fisheries); scallop fishery; mid-water trawl fishery; commercial groundfish fishery; and recreational groundfish fishery. The commercial groundfish sub-ACL is further divided into the non-sector (common pool vessels) sub-ACL and the sector sub-ACL, based on the total vessel enrollment in all sectors as of September 1, 2009, and the cumulative Potential Sector Contributions (PSCs) associated with those sectors, as explained in Amendment 16 and the proposed rule for sector operations in FY 2010.

As indicated in the proposed rule for sector operations for FY 2010 (74 FR 68015, December 22, 2009), sector rosters were not finalized until May 1, 2010, because sectors had until April 30, 2010, to drop out of a sector and fish in the common pool. Because some vessels dropped out of sectors and became part of the common pool, the cumulative PSCs of all enrolled sector members, were reduced and the common pool sub-ACL was increased as indicated in the final rule specifying final ACLs for FY 2010 (75 FR 29459; May 26, 2010). Note that the overall groundfish sub-ACL (common pool sub-ACL plus the sector sub-ACL) did not change.

The FW 44 catch levels for all stocks were based upon the most recent scientific information at that time, i.e., the stock assessments conducted by the Groundfish Assessment Review Meeting (GARM III) in 2008, as well as subsequent pertinent information (for pollock, as explained below and found in the Appendix in the EA). The pertinent stock assessment reference document produced by NOAA Fisheries' Northeast Fisheries Science Center (NEFSC) is "Assessment of 19 Northeast Groundfish Stocks through 2007" (NEFSC Reference Document 08-15).

GARM III originally characterized pollock as overfished and subject to overfishing, and in accordance with required procedures, NMFS notified the Council of the status of the stock (September 2, 2008 letter from Patricia Kurkul, NMFS Administrator, Northeast Region, to Paul Howard). Subsequent correspondence resulted in two modifications to the characterization of the status of the pollock biomass (see Appendix). A September 16, 2008, letter from the Council to Patricia Kurkul, noted that these determinations regarding stock status were based upon erroneous methods. NMFS subsequently made changes to the calculations and revised the characterization of stock status as approaching overfishing (October 3, 2008 letter from Patricia Kurkul to Paul Howard). Finally, the stock status determination was revised a third time in order to incorporate the most recent scientific information (fall 2008 trawl survey data), and again characterize the pollock stock as overfished (February 2, 2009, letter from Patricia Kurkul to Paul Howard).

The Northeast Fisheries Science Center (NEFSC) in conjunction with the Northeast Regional Coordinating Committee, which provides advice on the scheduling and prioritization of stock assessments, decided to schedule another pollock stock assessment in 2010, due to the high uncertainty of the determination of pollock stock status (as noted in the GARM III stock assessment conclusions), as well as the advice of the Council's SSC. The SSC had recommended that pollock should be reassessed as soon as possible to derive a more reliable basis for projection and catch advice (9/23/09 Memorandum from Dr. Steve Cadrin, Chairman of the SSC to Paul Howard, Executive Director of the Council). The 2010 pollock benchmark assessment was scheduled as soon as practicable, in consideration of the timing constrains of the availability of pertinent data, and other constraints. The 2010 pollock stock assessment is described in more detail under the affected environment section of this EA (Section 4.0).

To summarize the above background information briefly, the specification of pollock catch limits in FW 44 was in accordance with the procedures implemented by Amendment 16 to the FMP, and based upon GARM III results, as well as the fall 2008 survey data. The FW 44 pollock catch limits were based upon the best available scientific information at the time. The pollock catch limits for the common pool and Sectors was adjusted slightly subsequent to FW 44 due to vessels dropping out of sectors to fish in the common pool.

2.2 Purpose and Need

As described in more detail below, the purpose of this action is to revise pollock catch limits for fishing year 2010 in order to reflect the most recent preliminary scientific information, which indicates that the pollock stock is rebuilt. If the Secretary finds that an emergency exists, Section 305(c) of the MSA authorizes him to promulgate emergency regulations to address the emergency for any fishery. NMFS last issued policy guidelines in determining whether the use of an emergency rule is justified (62 FR 44421; August 21, 1997). The guidelines state that the preparation of management actions under the emergency provisions of the MSA should be limited to special circumstances where substantial harm or disruption of the resource, fishery, or community would be caused in the time it would take to follow standard rulemaking procedures. The emergency criteria of the policy guidelines define the existence of an emergency as a situation that: "(1) Results from recent, unforeseen events or recently discovered circumstances; and (2) presents serious conservation or management problems in the fishery; and (3) can be addressed through emergency regulations for which the immediate benefits outweigh the value of advance notice, public comment, and deliberative consideration of the impacts on participants to the same extent as would be expected under the normal rulemaking process". The justifications described in the guidelines include the prevention of significant direct economic loss or to preserve a significant economic opportunity that otherwise might be foregone, and the prevention of significant community impacts.

The measures may remain in place for 180 days, but may be extended for an additional 186 days if the public has had an opportunity to comment on the measures. The EA analyzes the impacts of the action for the duration of a year.

The preliminary results of the 2010 pollock assessment, as described in more detail under Section 4.0 of this document, provide a new understanding of the status of pollock. The stock is rebuilt (i.e., is not overfished), and overfishing is not occurring (i.e., the fishing mortality is at a sustainable level). Revised pollock catch levels are therefore warranted based on the new information. The new scientific information indicates that the catch level of pollock is substantially larger than the catch levels specified by FW 44 for FY 2010.

The new information from the pollock stock assessment presents a recently discovered circumstance and therefore warrants emergency action. Although the new assessment has been ongoing for a number of weeks, it was not possible to have predicted its outcome; nor could the results have been expedited because of practicability problems in convening the necessary scientists, several of whom are not affiliated with NOAA, to complete the assessment and its peer review.

The emergency presents serious conservation and management problems to the fishery because the current low catch limits for various stocks, including pollock, could result in substantially reduced fishing effort and decreased catch and revenue due to the multispecies nature of the fishery. When the projected catch of the ACL for a single stock such as pollock triggers a reduction or cessation of fishing effort (as required by the FMP for common pool and Sector vessels, respectively), not only is the catch of pollock affected, but the catch of numerous other stocks that are caught concurrently is also reduced.

Although the Council has the authority to develop a management action to modify the pollock catch limits, an emergency action can be developed and implemented by NMFS more swiftly than a Council action which is subject to procedural and other requirements not applicable to the Secretary. If the normal regulatory process is used to revise the pollock catch limits would take substantially longer for the new limits to be implemented, and could result in triggering restrictive, and economically harmful management actions that otherwise may have been avoided.

NMFS has determined that the current situation meets the criteria for emergency action. Furthermore, under the National Standard 1 Guidelines (74 FR 3178; January 16, 2009), in the context of an emergency action, the involvement of the SSC in the specification of ABC is not required. Although NMFS could wait for the SSC to consider the new assessment, the time necessary to complete such a process would unduly delay the possibility of meeting the emergency exigencies of this matter. In order to expedite the process of revising the specification of the pollock catch limit, NMFS did not utilize the expertise of the SSC, but relied instead upon the control rule for ABC previously established by the SSC under Amendment 16.

Only one alternative, in addition to the No Action alternative, is analyzed because of the narrow objective of the action, i.e., the revision of the pollock catch limit specifications for FY 2010. Although the pollock catch limit specifications would be revised under this action, they do not change the catch limit parameters and methods of calculating catch limits implemented by Amendment 16 to the FMP. Given the short duration that this action will be in effect, and the fact that the proposed alternative is within the context of management measures already in place, it is not feasible to consider a broader range of alternatives. Furthermore, consideration of a broader suite of alternatives would undermine NMFS's ability to analyze and implement new catch specifications in a timely manner. The scope of this action is only the current 2010 fishing year. The Council may consider a more comprehensive set of alternatives for long-term modifications to the FMP.

3.0 Alternatives

3.1 Status Determination Criteria

3.1.1 No Action

Under the No Action alternative, the Status Determination Criteria (Criteria) adopted by Amendment 16 for pollock would not be changed. Amendment 16 adopted two elements of the Criteria: The Criteria specified as a parameter that describes a quantity; and the most recent numerical estimate of that parameter. Under the No Action Alternative the biomass target would remain “external” (not a biomass amount, but a proxy (2.00 kg/tow); and the Maximum Fishing Mortality Threshold would remain “Relative F at replacement” a proxy (5.66 c/i).

3.1.2 Proposed Action (Preferred Alternative) Revised Status Determination Criteria

For the Status Determination Criteria, under the proposed action, the pollock biomass target parameter (Bmsy proxy) would be SSB msy (40% Maximum Spawning Potential (MSP)) (91,000 mt); and the maximum fishing mortality threshold would be the Fmsy proxy (F 40% MSP). To provide a consistent metric for expressing F over time, an unweighted average F for ages 5-7 ($F_{5\text{-}7}$) was used in the stock assessment (SAW 50; 2010). Expressed as the average F experienced at ages 5-7 for 2005-2009, the estimate is $F_{40\%,\ 5\text{-}7} = 0.25$ (which corresponds to a fully selected F of 0.41 at age 7). The minimum biomass threshold would remain at one half the biomass target. Additional information regarding the pertinent stock assessment is in Section 4.2.2.

3.2 Catch Limits

3.2.1 No Action

Under the No Action alternative, no revisions would be made to any of the pollock catch limits for FY 2010 (OFL, ABC, Other sub-component, State Waters sub-component, Groundfish sub-ACL, Sector sub-ACL, Common Pool sub-ACL, Incidental Catch TAC, or Sector Annual Catch Entitlements (ACEs). Those values would remain as specified by the FW 44 final rule (based on GARM III stock assessment as explained in Section 3.1 of this EA), as shown in Tables 2 and 3 below.

Table 2. No-Action Pollock Catch Limits for FY 2010 (mt)

Pollock Catch Limit	Specification (mt)
Overfishing Level	5,084
Acceptable Biological Catch (U.S.)	3,293
Other sub-component	200
State Waters sub-component	200
Groundfish sub-ACL	2,748
* Sector sub-ACL	2,686
* Common pool sub-ACL	62
* Incidental Catch TAC	1.24

* Final rule that adjusted specifications (75 FR 29459; May 26, 2010)

Table 3. No Action-Annual Catch Entitlements for Sectors (mt) for FY 2010

Sector	Current ACE (FW 44 Adjustment)
Fixed Gear	214
NCCS	12
NEFS 2	338
NEFS 3	202
NEFS 4	155
NEFS 5	11
NEFS 6	88
NEFS 7	21
NEFS 8	18
NEFS 9	105
NEFS 10	40
NEFS 11	255
NEFS 12	1
NEFS 13	61
Port Clyde Community	117
Sustainable Harvest	1,047

All ACE values for sectors assume that each sector member has a valid permit for FY 2010.
NCCS: Northeast Coastal Communities Sector; NEFS: Northeast Fishery Sectors

3.2.2 Proposed Action (Preferred Alternative) – Revised Catch Limits

The proposed action would modify the FY 2010 pollock catch limits to reflect the results of the 2010 benchmark assessment of pollock (SAW 50). In accordance with Amendment 16, the calculation of the revised catch limit was completed in the same manner as the originally specified pollock catch limit, with the exception that a deduction for Canadian catch was not necessary, because the new stock assessment does not include Canadian waters. The pollock ABC is calculated as the projected catch associated with 75 percent of Fmsy (19,800 mt). Six percent of the pollock ABC is used to account for anticipated state-waters catch (1,180 mt), six percent of the ABC accounts for anticipated pollock catch by non-groundfish fisheries (1,180 mt, other sub-components), and the remaining amount is for the groundfish fishery (17,424 mt). To account for management uncertainty, this amount was reduced by five percent (871 mt), resulting in a final groundfish sub-ACL of 16,553 mt. The sector ACLs are based upon sector membership as of May 1, 2010 (Tables 4 and 5). Consistent with the FMP, the incidental catch TAC is divided between the Regular B DAS Program (84-percent) and the Closed Area I Hook Gear Haddock Special Access Program (14-percent).

Although this analysis of the Preferred Alternative occurred prior to finalization of the pollock stock assessment, implementation of the Preferred Alternative is contingent upon the results of the stock assessment final report, and will not occur until the report is completed. If the pertinent catch limits based upon the final stock assessment report are different than those based on the preliminary stock assessment information, an addendum to this EA will be prepared and the catch limits modified as appropriate.

Table 4. Revised Pollock Catch Levels for FY 2010

Pollock Catch Limit	Current Specification (mt) FW 44 Adjustment	Revised Specification (mt)
Overfishing Level (OFL) of Catch	5,084	25,200
Acceptable Biological Catch (ABC)	3,293	19,800
State Waters ACL subcomponent	200	1,188
Other ACL subcomponent	200	1,188
Groundfish sub-ACL	2,748	16,553
Sector sub-ACL	2,686	16,178
Common Pool sub-ACL	62	375
Incidental Catch TAC	1.24	7.5

Table 5. Pollock Annual Catch Entitlement by Sector (mt) for FY 2010

Sector	Current ACE (mt) FW 44 Adjustment	Revised ACE (mt)
Fixed Gear	214	1,290
NCCS	12	73
NEFS 2	338	2,034
NEFS 3	202	1,218
NEFS 4	155	934
NEFS 5	11	68
NEFS 6	88	529
NEFS 7	21	124
NEFS 8	18	106
NEFS 9	105	632
NEFS 10	40	239
NEFS 11	255	1,533
NEFS 12	1	9
NEFS 13	61	364
Port Clyde Community	117	707
Sustainable Harvest	1,047	6,309
Tri-State	2	9
Total	**2,686**	**16,178**

All ACE values for sectors assume that each sector member has a valid permit for FY 2010.
NCCS: Northeast Coastal Communities Sector; NEFS: Northeast Fishery Sectors

Duration of Pollock Catch Limits:

Because the revised specifications would be implemented based upon the authority of the Secretary of Commerce to take emergency action, the duration of the action would be limited by the MSA to an initial period of 180 days, with a potential extension of an additional 186 days, i.e., for FY 2010. NMFS anticipates that the Council will specify revised catch limits for pollock for FY 2011 and 2012. However, if the anticipated Council action to specify catch levels for FY 2011 and 2012 is delayed, the pollock catch limits for 2010 may remain in effect during the first portion of FY 2011 until the Council action to specify catch limits is effective, or until the catch limits implemented by this emergency action expire, whichever comes first.

Rationale

Based on the recent benchmark stock assessment for pollock, and the revised status of the stock, increased annual catch limits for 2010 are warranted. For common pool vessels, NMFS considered implementing an increased trip limit for pollock as a part of this alternative, however determined that emergency action to raise the trip limit is not necessary. Under the current FMP, the NMFS Administrator, Northeast Region, has the authority to increase the trip limit in order to facilitate achievement of the common pool sub-ACL for pollock. NMFS will monitor the fishery closely, and if a catch projection indicates that the trip limit for pollock should be increased, NMFS will take inseason action to do so.

3.3 Considered but Rejected (Revisions to Days-at-Sea measures)

NMFS considered, but rejected a revision to the DAS counting rate or allocation. For common pool vessel, current regulations under the FMP authorize the Regional Administrator to adjust either the DAS counting rate or allocation in response to catch projections in order to optimize catch or prevent catch from exceeding a sub-ACL. However, because DAS management measures apply to broad stock areas, and therefore affect fishing effort on multiple stocks, relaxing the DAS measures would need to be justified for all stocks in the broad stock areas. NMFS determined that adjustment of DAS is not a practical alternative for this emergency action, given the range of the pollock stock, and the impact of DAS measures on multiple stock areas.

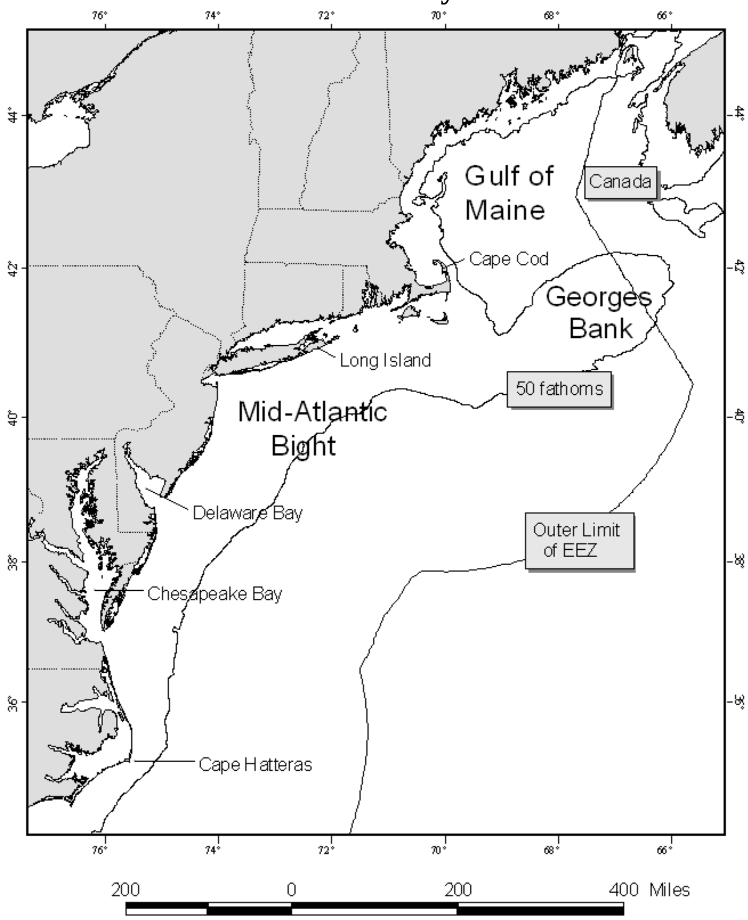
4.0 Affected Environment

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

4.1 Physical Environment/Habitat/EFH

The Northeast U.S. Shelf Ecosystem (Figure 1) has been described as including the area from the Gulf of Maine south to Cape Hatteras, North Carolina, extending from the coast seaward to the edge of the continental shelf, including offshore to the Gulf Stream (Sherman et al. 1996). The continental slope includes the area east of the shelf, out to a depth of 2,000 meters (m). Four distinct sub-regions comprise the Northeast Region: The Gulf of Maine, Georges Bank, the Southern New England/Mid-Atlantic region, and the continental slope. Since the groundfish fleet will primarily be fishing in the inshore and offshore waters of the Gulf of Maine, Georges Bank, and the Southern New England/Mid-Atlantic areas, the description of the physical and biological environment is focused on these sub-regions. Information on the affected environment was extracted from Stevenson, et al. (2004).

Figure 1. Northeast U.S. Shelf Ecosystem

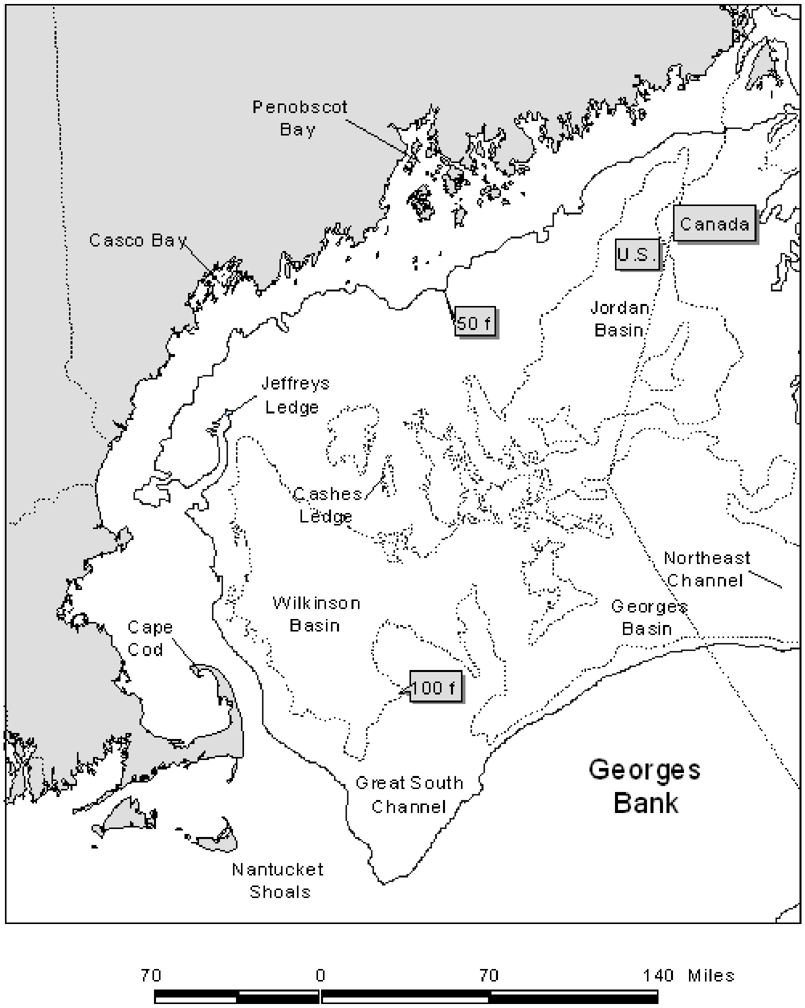


4.1.1 Affected Physical Environment

4.1.1.1 Gulf of Maine

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

Figure 2. Gulf of Maine



The Gulf of Maine is an enclosed coastal sea that was glacially derived and is characterized by a system of deep basins, moraines, and rocky protrusions (Stevenson et al. 2004). The Gulf of Maine is topographically diverse from the rest of the continental border of the U.S. Atlantic coast (Stevenson et al. 2004). Very fine sediment particles created and eroded by the glaciers have collected in thick deposits over much of the seafloor of the Gulf of Maine, particularly in its deep basins. These mud deposits blanket and obscure the irregularities of the underlying bedrock, forming topographically smooth terrains. In the rises between the basins, other materials are usually at the surface. Unsorted glacial till covers some morainal areas, sand predominates on some high areas, and gravel,[1] sometimes with boulders, predominates others. Bedrock is the predominant substrate along the western edge of the Gulf of Maine, north of Cape Cod in a narrow band out to a depth of about 60 m. Mud predominates in coastal valleys and basins that often abruptly border rocky substrates. Gravel, often mixed with shell, is common

[1] The term “gravel,” as used in this analysis, is a collective term that includes granules, pebbles, cobbles, and boulders in order of increasing size. Therefore, the term “gravel” refers to particles larger than sand and generally denotes a variety of “hard bottom” substrates**.**

adjacent to bedrock outcrops and in fractures in the rock. Gravel is most abundant at depths of 20 to 40 m, except off eastern Maine where a gravel-covered plain exists to depths of at least 100 m. Sandy areas are relatively rare along the inner shelf of the western Gulf of Maine, but are more common south of Casco Bay, especially offshore of sandy beaches.

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

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

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

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

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

Primarily fine muds at depths of 60 to 140 m within cold Gulf of Maine Intermediate Water[2]: fauna are dominated by polychaetes, shrimp, and cerianthid anemones;

Cold deep water, muddy bottom: fauna include species with wide temperature tolerances which are sparsely distributed, diversity low, dominated by a few polychaetes, with brittle stars, sea pens, shrimp, and cerianthids also present;

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

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

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

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[2] Maine Intermediate Water is described as a mid-depth layer of water that preserves winter salinity and temperatures, and is located between more saline Maine bottom water and the warmer, stratified Maine surface water. The stratified surface layer is most pronounced in the deep portions of the western Gulf of Maine.

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

Deepwater/Slope and Canyon: offshore hake, blackbelly rosefish, Gulf stream flounder;

Intermediate/Combination of Deepwater Gulf of Maine-Georges Bank and Gulf of Maine-Georges Bank Transition: silver hake, red hake, goosefish (monkfish);

Shallow/Gulf of Maine-Georges Bank Transition Zone: Atlantic Cod, haddock, pollock;

Shallow water Georges Bank-southern New England: yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin;

Deepwater Gulf of Maine-Georges Bank: white hake, American plaice, witch flounder, thorny skate; and

Northeast Peak/Gulf of Maine-Georges Bank Transition: Atlantic cod, haddock, pollock.

4.1.1.2 Georges Bank

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

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

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

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

The Western Basin assemblage is found in comparatively deepwater (150 to 200 m) with relatively slow currents and fine bottom sediments of silt, clay, and muddy sand. Fauna are comprised mainly of small burrowing detritivores and deposit feeders, and carnivorous scavengers.

The Northeast Peak assemblage is found in variable depth and current strength and includes coarse sediments, consisting mainly of gravel and coarse sand with interspersed boulders, cobbles, and pebbles. Fauna tend to be sessile (coelenterates, brachiopods, barnacles, and tubiferous annelids) or free-living (brittle stars, crustaceans, and polychaetes), with a characteristic absence of burrowing forms.

The Central Georges Bank assemblage occupies the greatest area, including the central and northern portions of Georges Bank in depths less than 100 m. Medium-grained shifting sands predominate this dynamic area of strong currents. Organisms tend to be small to moderately large with burrowing or motile habits. Sand dollars are most characteristic of this assemblage.

The Southern Georges Bank assemblage is found on the southern and southwestern flanks at depths from 80 to 200 m, where fine-grained sands and moderate currents predominate. Many southern species exist here at the northern limits of their range. Dominant fauna include amphipods, copepods, euphausiids, and starfish.

As stated in Section 4.2.4, common demersal fish species in Georges Bank are offshore hake, blackbelly rosefish, Gulf stream flounder, silver hake, red hake, goosefish (monkfish), Atlantic cod, haddock, pollock, yellowtail flounder, windowpane flounder, winter flounder, winter skate, little skate, longhorn sculpin, white hake, American plaice, witch flounder, and thorny skate.

4.1.1.3 Southern New England/Mid-Atlantic Bight

The Mid-Atlantic Bight includes the shelf and slope waters from Georges Bank south to Cape Hatteras, and east to the Gulf Stream (Figure 1). The northern portion of the Mid-Atlantic Bight is sometimes referred to as southern New England and generally includes the area of the continental shelf south of Cape Cod from the Great South Channel to Hudson Canyon. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 to 200 m water depth) at the shelf break. In both the Mid-Atlantic Bight and on Georges Bank, numerous canyons incise the slope, and some cut up onto the shelf itself (Stevenson et al. 2004). Like the rest of the continental shelf, the topography of the Mid-Atlantic Bight was shaped largely by sea level fluctuations during past ice ages. Since that time, currents and waves have modified this basic structure.

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

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

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

The “sand fauna” zone is dominated by polycheates and was defined for sandy sediments (1 percent or less silt) that are at least occasionally disturbed by waves, from shore out to a depth of about 50 m.

The “silty sand fauna” zone is dominated by amphipods and polychaetes and occurs immediately offshore from the sand fauna zone, in stable sands containing a small amount of silt and organic material.

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

Rather than substrate as in the Gulf of Maine and Georges Bank, latitude and water depth are considered to be the primary factors influencing demersal fish species distribution in the Mid-Atlantic Bight area. The following assemblages were identified by Colvocoresses and Musick (1984) in the Mid-Atlantic subregion during spring and fall.[4]

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

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

Warm temperate portions: black sea bass, summer flounder, butterfish, scup, spotted hake, and northern searobin;

Water of the inner shelf: windowpane flounder;

Water of the outer shelf: fourspot flounder; and

Water of the continental slope: shortnose greeneye, offshore hake, blackbelly rosefish, and white hake.

4.1.2 Habitat

Habitats provide living things with the basic life requirements of nourishment and shelter, ultimately providing for both individual and population growth. The fishery resources of a region are influenced by the quantity and quality of available habitat. Depth, temperature, substrate, circulation, salinity, light, dissolved oxygen, and nutrient supply are important parameters of a given habitat which, in turn, determine the type and level of resource population that the habitat supports. Table 6 briefly summarizes the habitat requirements for each of the 12 groundfish species managed by the Northeast Multispecies (large-mesh) FMP, some of which consist of multiple stocks within the Northeast Multispecies FMP. Information for this table was extracted from the original FMP and profiles available from NMFS (Clark 1998). Essential fish habitat information for egg, juvenile and adult life stages for these species was compiled from Stevenson et al. 2004 (Table 6). Note that EFH for the egg stage was included for species that have a demersal egg stage (winter flounder and ocean pout); all other species' eggs are found either in the surface waters, throughout the water column, or are retained inside the parent until larvae hatch. The egg habitats of these species are therefore not generally subject to interaction with gear and are not listed in Table 6.

Table 6. Summary of geographic distribution, food sources, essential fish habitat features, and commercial gear used to catch each species in the Northeast Multispecies Fishery Management Unit

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

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

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

4.1.3 Essential Fish Habitat (EFH)

EFH is defined by the Sustainable Fisheries Act of 1996 as “[t]hose waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The environment that could potentially be affected by the Proposed Action has been identified as EFH for benthic life stages of species that are managed under the Northeast Multispecies FMP; Atlantic sea scallop; monkfish; deep-sea red crab; northeast skate complex; Atlantic herring; summer flounder, scup, and black sea bass; tilefish; squid, Atlantic mackerel, and butterfish; Atlantic surfclam and ocean quahog FMPs. EFH for the species managed under these FMPs includes a wide variety of benthic habitats in state and Federal waters throughout the Northeast U.S. Shelf Ecosystem. EFH descriptions of the general substrate or bottom types for all the benthic life stages of the species managed under these FMPs are summarized in Table 12. Full descriptions and maps of EFH for each species and life stage (except Atlantic wolffish) are available on the NMFS Northeast Region website at http://www.nero.noaa.gov/hcd/index2a.htm. In general, EFH for species and life stages that rely on the seafloor for shelter (e.g., from predators), reproduction, or food is vulnerable to disturbance by bottom tending gear. The most vulnerable habitat is more likely to be hard or rough bottom with attached epifauna.

4.1.4 Gear Types and Interaction with Habitat

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

4.1.4.1 Gear Types

The characteristics of typical gear types used by the multispecies fishery are summarized in Table 7.

Table 7. Descriptions of the Fixed Gear Types Used by the Multispecies Fishery

Gear Type	Trawl	Sink/ Anchor Gillnets	Bottom Longlines	Hook and Line
Total Length	Varies	90 m long per net.	~450 m.	Varies
Lines	N/A	Leadline and floatline with webbing (mesh) connecting	Mainline is parachute cord. Gangions (lines from mainline to hooks) are 15 inches long, 3 to 6 inches apart, and made of shrimp twine	One to several with mechanical line fishing
Nets	Rope or large-mesh size, depends upon target Species	Monofilament, mesh size depends on the target species (groundfish nets minimum mesh size of 6.5 inches	No nets, but 12/0 circle hooks are required.	No nets, but single to multiple hooks, “umbrella rigs”
Anchoring	N/A	22 lb (9–11 kg) Danforth-style anchors are required at each end of the net string	20-24lb (9-11kg) anchors, anchored at each end, using pieces of railroad track, sash weights, or Danforth anchors, depending on currents	No anchoring, but sinkers used (stones, lead)
Frequency/ Duration of Use	Tows last for several hours	Frequency of trending changes from daily (when targeting groundfish) to semi-weekly (when targeting monkfish and skate)	Usually set for a few hours at a time	Depends upon cast/target species

4.1.4.2 Trawl Gear

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

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

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

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

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

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

4.1.4.3 Gillnet Gear

The fishery also uses individual sink/anchor gillnets which are about 90 m long and are usually fished as a series of 5 to 15 nets attached end-to-end. A vast majority of “strings” consist of 10 gillnets. Gillnets typically have three components: the leadline, webbing and floatline. In New England, leadlines are approximately 30 kilogram (kg)/net. Webs are monofilament, with the mesh size depending on the species of interest. Nets are anchored at each end using materials such as pieces of railroad track, sash weights, or Danforth anchors, depending on currents. Anchors and leadlines have the most contact with the bottom. For New England groundfish, frequency of tending ranges from daily to semiweekly [Northeast Region Essential Fish Habitat Steering Committee (NREFHSC 2002)]. All SHS gillnet vessels would be day fishing vessels.

A bottom gillnet is a large wall of netting equipped with floats at the top and lead weights along the bottom. Bottom gillnets are anchored or staked in position. Fish are caught while trying to pass through the net mesh. Gillnets are highly selective because the species and sizes of fish caught are dependent on the mesh size of the net. Bottom gillnets are used to catch a wide range of species. Bottom gillnets are fished in two different ways, as "standup" and "tiedown" nets (Williamson 1998). Standup nets are typically used to catch Atlantic cod, haddock, pollock, and hake and are soaked (duration of time the gear is set) for 12 to 24-hours. Tiedown nets are used to catch flounders and monkfish and are left in the water for 3 to 4 days. Other species caught in bottom gillnets in are dogfish and skates.

4.1.4.4 Hook and Line Gear

4.1.4.4.1 Hand Lines/Rod and Reel

The simplest form of hook-and-line fishing is the hand line, which may be fished using a rod and reel or simply "by hand". The gear consists of a line, sinker (weight), gangion, and at least one hook. The line is typically stored on a small spool and rack and varies in length and the sinkers vary from stones to cast lead. The hooks can vary from single to multiple arrangements in "umbrella" rigs. An attraction device must be used with the hook, usually consisting of a natural bait or an artificial lure. Hand lines can be carried by currents until retrieved or fished in such as manner as to hit bottom and bounce (Stevenson et al. 2004). Hand lines and rods and reels are used in the Northeast Region to catch a variety of demersal species.

4.1.4.4.2 Mechanized Line Fishing

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

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

4.1.4.5 Longlines

The remaining gear type that is used by the fishery are bottom longlines which are a long length of line, often several miles long, to which short lengths of line ("gangions") carrying baited hooks are attached. Longlining is undertaken for a wide range of bottom species. Bottom longlines typically have up to six individual longlines strung together for a total length of more than 450 m and are deployed with 9 to 11 kg anchors. The mainline is a parachute cord. Gangions are typically 40 centimeters (cm) long and 1 to 1.8 m apart and are made of shrimp twine. These longlines are usually set for a few hours at a time (NREFHSC 2002).

When fishing with hooks, all hooks must be 12/0 circle hooks. A "circle hook" is, defined as a hook with the point turned back towards the shank and the barbed end of the hook is displaced (offset) relative to the parallel plane of the eyed-end or shank of the hook when laid on its side. The design of circle hooks enables them to be employed to reduce the damage to habitat features that would occur with use of other hook shapes (NREFHSC 2002).

4.1.4.6 Gear Interaction with Habitat

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

Amendment 13 (NEFMC 2003) describes the general effects of bottom trawls on benthic marine habitats. The primary source document used for this analysis was an advisory report prepared for the International Council for the Exploration of the Seas (ICES) that identified a number of possible effects of beam trawls and bottom otter trawls on benthic habitats (ICES

2000). This report is based on scientific findings summarized in Lindeboom and de Groot (1998), which were peer-reviewed by an ICES working group. The focus of the report is the Irish Sea and North Sea, but it also includes assessments of effects in other areas. Two general conclusions were: 1) low-energy environments are more affected by bottom trawling; and 2) bottom trawling affects the potential for habitat recovery (i.e., after trawling ceases, benthic communities and habitats may not always return to their original pre-impacted state). Regarding direct habitat effects, the report also concluded that:

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

Loss of structure-forming organisms such as bryozoans, tube-dwelling polychaetes, hydroids, seapens, sponges, mussel beds, and oyster beds (<u>changes may be permanent</u> leading to an overall change in habitat diversity, which could in turn lead to the local loss of species and species assemblages dependent on such biogenic features);

Reduction in complexity caused by redistributing and mixing of surface sediments and the degradation of habitat and biogenic features, leading to a decrease in the physical patchiness of the seafloor (<u>changes are not likely to be permanent</u>); and

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

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

Trawling reduces habitat complexity;

Repeated trawling results in discernable changes in benthic communities;

Bottom trawling reduces the productivity of benthic habitats; and

Fauna that live in low natural disturbance regimes are generally more vulnerable to fishing gear disturbance.

An additional source of information for various gear types that relates specifically to the Northeast region is the report of a "Workshop on the Effects of Fishing Gear on Marine Habitats off the Northeastern U.S." sponsored by the NEFMC and Mid-Atlantic Fishery Management Council (MAFMC) in October 2001 (NEFSC 2002). A panel of invited fishing industry members and experts in the fields of benthic ecology, fishery ecology, geology, and fishing gear technology convened for the purpose of assisting the NEFMC, MAFMC, and NMFS with: 1) evaluating the existing scientific research on the effects of fishing gear on benthic habitats; 2) determining the degree of impact from various gear types on benthic habitats in the Northeast; 3) specifying the type of evidence that is available to support the conclusions made about the degree of impact; 4) ranking the relative importance of gear impacts on various habitat types; and 5) providing recommendations on measures to minimize those adverse impacts. The panel was provided with a summary of available research studies that summarized information relating to the effects of bottom otter trawls, bottom gillnets, and longlines. Relying on this information plus professional judgment, the panel identified the effects and the degree of impact of these gears on mud, sand, and gravel/rock habitats.

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

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

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

4.2 Target Species

This section is primarily focused on pollock as the impact of this action on other northeast groundfish stocks is expected to be minimal. Information regarding the pollock stock assessment is discussed in Section 4.2.2. Pollock life history information is presented in Section 4.2.3. A summary of pollock landings and revenue is included in Section 4.5.5.

4.2.1 Species and Stock Status Descriptions

The 14 allocated target stocks managed under the Northeast Multispecies FMP are presented in Table 8. The stock status descriptions for these groundfish stocks (including all management units of each species) are based primarily on the GARM III report (NEFSC 2008) benchmark assessments. With the exception of pollock, the most recent stock status descriptions can be accessed via the NMFS website at http://www.nmfs.noaa.gov/sfa/statusoffisheries/SOSmain.htm.

Table 8. Status of the Northeast Groundfish Stocks in 1st Quarter 2010

Stock	Overfished? (Is Biomass below Threshold?)	Overfishing Occurring? (Is Fishing Mortality above Threshold?)
Gulf of Maine (GOM) Cod	No	Yes
Georges Bank (GB) Cod	Yes	Yes
GOM Haddock	No	No
GB Haddock	No	No
Redfish	No	No
Pollock	Yes	Yes
White Hake	Yes	Yes
Cape Cod/GOM Yellowtail Flounder	Yes	Yes
GB Yellowtail Flounder	Yes	Yes
SNE/MA Yellowtail Flounder	Yes	Yes
GOM Winter Flounder	Unknown	Unknown
GB Winter Flounder	Yes	Yes
SNE/MA Winter Flounder	Yes	Yes
Witch Flounder	Yes	Yes
American Plaice	No	No
Northern Windowpane Flounder	Yes	Yes
Southern Windowpane Flounder	No	Yes
Ocean Pout	Yes	No
Halibut	Yes	No
Atlantic Wolffish	Yes	Unknown

4.2.2 SAW 50 Pollock Stock Assessment Summary for 2010

The following is an abridged version of the Assessment Summary Report (Pollock WP2), and pertinent information. Tables and figures from this report may be found in the Appendix of this EA.

State of Stock:

Comparing the current 2009 estimates of Spawning Stock Biomass (SSB) and Fishing Mortality (F) to the Maximum Sustainable Yield (MSY) reference points, the stock is not overfished and overfishing is not occurring. A new assessment model (ASAP) is proposed as the best scientific information available for determining stock status for pollock. Pollock spawning stock biomass in 2009 (SSB_{2009}) is 196,000 mt and the average fishing mortality on ages 5-7 (F_{5-7}) is 0.07. $F_{40\%}$ is accepted as the proxy for F_{MSY} (the overfishing threshold). The average fishing mortality on ages 5 to 7 is chosen as the basis of indicator and reference point estimation in order to account for temporal changes in fishery age-specific selectivity. $F_{40\%}$, measured as F on the fully selected age (age-7) in the most recent period (2005-2009), is 0.41, which is equivalent to an average fishing mortality on ages 5-7 (F_{5-7}) of 0.25. SSB_{MSY} (the biomass target) is estimated to be 91,000 mt. If the previously used index based model (AIM) estimates had been used to determine stock status, the resource would have been judged to be overfished and overfishing to be occurring. In contrast to the previously used AIM model, ASAP uses age structure, additional surveys, more comprehensive catch information, changes in selectivity and uncertainty in the input data.

Projections:

The ASAP model estimates that the stock is not overfished, so no rebuilding projections were conducted. For the purposes of informing ABC decisions, projections were made for three constant F scenarios: $F=F_{status\ quo}=F_{2009}$, $F=0.75*F_{40\%}$, and $F=F_{40\%}$. Under all three scenarios, spawning biomass declines from SSB_{2009}=196,000 mt until it approaches equilibrium at the projected F. Under $F_{40\%}$, the median SSB equilibrates at 91,000 mt (the proxy for SSB_{MSY}). Projected median recruitment does not vary by the F scenario, because the same time series of recruitments (1970-2007) was resampled in all projections. The median recruitment was 19.2 million age 1 fish, with 5 th and 95 th percentiles ranging from 8.3 to 42 million fish. Projected median catch under $F_{status-quo}$ decrease from 8,100 mt in 2010 to 7,200 mt in 2012, then gradually increase until equilibrating around 8,400 mt in 2017. Projecting at $0.75*F_{40\%}$, the median catch fluctuates from 19,800 mt in 2010 to 15,400 mt in 2012, and continues to fluctuate in this range until equilibrating at 14,500 mt. Projecting at $F_{40\%}$, median catch declines from 25,700 mt in 2010 to 17,500 mt in 2017 with minor fluctuations until equilibrating at 16,200 mt (the proxy for MSY). Note that a projected 2010 catch of 25,700 mt would exceed MSY, be more than double recent catch, and has not been observed since the 1980's.

Stock Distribution and Identification:
Pollock are known to move widely throughout Gulf of Maine and into Canadian waters. Previous assessments of pollock assumed a variety of stock definitions. Recent assessments of pollock in US waters are for “the portion of the unit stock of pollock primarily within the USA EEZ (NAFO Subareas 5&6), including a portion of eastern Georges Bank (Subdivision 5Zc) that is under Canadian management jurisdiction”. Canadian stock assessments treat the management unit within the Canadian EEZ separately. Given uncertainties in stock structure and the management implications, a slightly refined assessment unit that reflects the US jurisdictional waters was used.

Data and assessment:
The previous assessment of pollock was based on an AIM model that used total commercial landings and weight per tow from the NEFSC fall survey. A new assessment model (ASAP) was developed which incorporates age structure, additional surveys, more comprehensive catch information, changes in selectivity and uncertainty in the input data.

Catch-at-age for 1970-2009 are used for two fleets: A composite commercial and a recreational fleet. The commercial fleet includes US catch by otter trawl and gillnet (with minor contributions from hook and line gear), as well as landings by distant water fleets (1970-1976) and Canadian fleets (1970-1985). Total discards for the commercial fleet are estimated for 1989-2008 from observer data. Recreational catch was included for 1981 to 2009.

NEFSC Spring and Fall surveys (1970-2009) number/tow were used in the ASAP model along with estimated CV and annual age composition.

Natural mortality was assumed to be 0.2 for all ages and years, corresponding to 1% survival to age 24 (the maximum age observed). Maturity at age was assumed constant for all years.

Biological Reference Points: $F_{40\%}$ is accepted as the proxy of the overfishing threshold (F_{MSY}). A deterministic value of $F_{40\%}$ was estimated from a yield per recruit analysis using 2005-2009 average SSB weights, catch weights, maturity and selectivity at age. Expressed as the average F experienced at ages 5-7 for 2005-2009, the estimate is $F_{40\%,\,5\text{-}7} = 0.25$, which corresponds to a fully selected F of 0.41 at age 7.

Stochastic projections at $F_{40\%}$ were used to determine biomass related reference points (SSB_{MSY} and MSY proxies). The proxy for SSB_{MSY}, the B_{TARGET}, is estimated at 91,000 metric tons, with 5th and 95th percentiles spanning 71,000 to 118,000 mt. One half of SSB_{MSY} is proposed for $B_{THRESHOLD}$ (45,500 mt).

The proxy for MSY is 16,200 mt, with 5th and 95th percentiles spanning 11,800 to 23,200 mt. The median recruitment was 19.2 million age 1 fish, with 5th and 95th percentiles ranging from 8.3 to 42 million fish. Distributions for SSB_{MSY} and MSY are given in Figure 9 (Appendix).

The previously used reference points were based upon the AIM model which was rejected.

Fishing Mortality: Since 1970, there has been a shift in fishery selectivity towards older ages. To provide a consistent metric for expressing F over the time series, an unweighted average F for ages 5-7 (F_{5-7}) was used. In 1970, F_{5-7} was 0.12, increased to 0.45 by 1986, and then steadily decreased to 2006, when it reached the time series low of 0.03. During 2007 – 2009, F_{5-7} was 0.05, 0.08, and 0.07, respectively (Figure 11). The uncertainty in the estimate of F_{5-7} in 2009 is described in Figure 10.

To provide a historical perspective on fishing mortality, a time series of $F_{40\%}$ corresponding to ages 5 through 7 is plotted along with the ASAP model estimate of F_{5-7} (Figure 11). This year-specific $F_{40\%}$ accounts for selectivity at age which has changed substantially through time. The fishing mortality reference point has increased significantly since the mid 1990s with the shift of fishing pressure towards older age groups (Figure 11). Overfishing was occurring in the 1980s.

Biomass: The ASAP model estimates a 1970 spawning stock biomass (SSB) of 297,000 mt. Spawning biomass decreased to the time series low (68,400 mt) in 1990 (Figure 13). Spawning biomass then increased steadily through 2006, with a slight decline during 2007 - 2009. Spawning biomass in 2009 is 196,000 mt (the uncertainty in the estimate of SSB2009 is provided in Figure 14).

Total population biomass follows the same trend as SSB (Figure 13). Exploitable biomass ranges from 35% to 70% of spawning biomass over the time series. This substantial difference is due to the estimated dome-shaped fishery selectivities (see special comments).

In order to provide an historical picture of biomass status, SSB_{MSY} proxies were calculated using year – specific selectivity and weights at age.

Recruitment: Mean recruitment (age 1) was around 21 million fish. Strong year classes were produced in 1971, 1979, 1997, 1998, 1999, and 2001 with about average recruitment in recent years (Figure 15).

Special Comments: (Jim to refer back to body of report)

- The ASAP model with dome-shaped survey and fishery selectivity implies the existence of a large biomass (35 – 70% of total) of Pollock (i.e. cryptic biomass) that neither current surveys nor the fishery can confirm. Assuming full survey selectivity for ages 6 and above reduces stock biomass and associated biomass reference points by 20 – 50%. Notwithstanding this, the stock did not appear to be overfished in either case. Under the full selectivity assumption, long-term catches can be expected to be reduced by 30%.
- The spatial assessment unit is based on jurisdictional boundaries and may not reflect a single self-sustaining resource.
- There is considerable uncertainty in indices of abundance from trawl surveys. The Bigelow appears to have lower catchability of Pollock than the Albatross, implying that precision of the survey time series is not likely to improve.

Spiny dogfish, skates, and monkfish may be affected by the Proposed Action and are considered in this EA as non-allocated bycatch in Section 4.3. These species are not allocated under the Northeast Multispecies FMP and are managed under their respective FMPs.

4.2.3 Pollock Life History

Pollock, *Pollachius virens*, occur on both sides of the North Atlantic. In the western North Atlantic, the species is most abundant on the western Scotian Shelf and in the Gulf of Maine. There is considerable movement of the species between the Scotian Shelf, Georges Bank, and the Gulf of Maine. Pollock eggs are buoyant, rising into the water column after fertilization. The pelagic larval stage lasts for 3 to 4 months, at which time the small juveniles or "harbor pollock" migrate inshore to inhabit rocky subtidal and intertidal zones. Pollock then undergo a series of inshore-offshore movements linked to temperature until near the end of their second year. At this point, the juveniles move offshore where the pollock remain throughout the adult stage. Pollock are a schooling species and are found throughout the water column. With the exception of short migrations due to temperature changes and north-south movements for spawning, pollock are fairly stationary in the Gulf of Maine and along the Nova Scotian coast. Male pollock reach sexual maturity at a larger size and older age than females. Age and size at maturity of pollock have declined in recent years, a trend that has also been reported in other marine fish species (e.g., haddock, witch flounder). The principal pollock spawning sites in the western North Atlantic are in the western Gulf of Maine, Great South Channel, Georges Bank, and on the Scotian Shelf. Spawning takes place from September to April. Spawning time is more variable in northern sites than in southern sites. Spawning occurs over hard, stony, or rocky bottom. Spawning activity begins when the water column cools to near 8°C, and peaks when temperatures are approximately 4.5 to 6°C. Thus, most spawning occurs within a comparatively narrow range of temperatures. A full description of the life history of the remaining allocated target stocks managed under the Northeast Multispecies FMP can be found in Framework 44.

4.2.4 Assemblages of Fish Species

Georges Bank and the Gulf of Maine have been historically characterized by high levels of fish production. Several studies have attempted to identify demersal fish assemblages over large spatial scales. Overholtz and Tyler (1985) found five depth-related groundfish assemblages for Georges Bank and the Gulf of Maine that were persistent temporally and spatially. Depth and salinity were identified as major physical influences explaining assemblage structure. Gabriel (1992) identified six assemblages, which are compared with the results of Overholtz and Tyler (1985) in Table 14 (adapted from Amendment 16). For the Affected Area, including southern New England, these assemblages and relationships are considered to be relatively consistent for purposes of general description. The assemblages include allocated target, non-allocated target, and bycatch species. As presented in Table 9, the terminology and definitions of habitat types varies slightly between the two studies. For further information on fish habitat relationships, see Table 6.

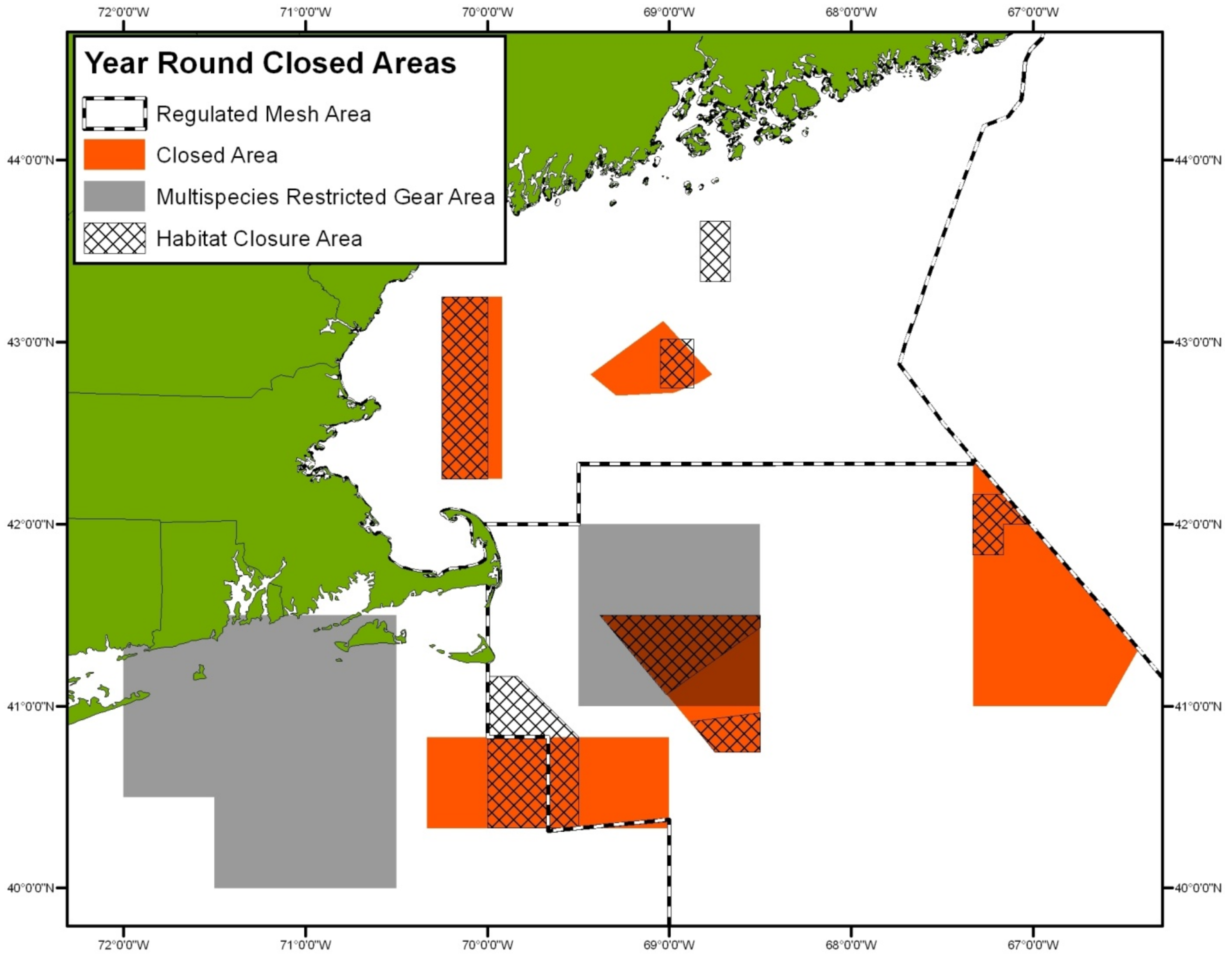
Table 9. Comparison of demersal fish assemblages of Georges Bank and the Gulf of Maine

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

4.2.5 Areas Closed to Fishing within the Groundfish Fishery Area

Select areas are closed to some level of fishing to protect the sustainability of fishery resources. The designation of long-term closures has resulted in the removal or reduction of fishing effort from important fishing grounds, with an expected result that fishery-related mortalities to stocks utilizing the closed areas may have been reduced. Figure 3 depicts the Northeast Multispecies year round closed areas, regulated mesh areas, habitat closure areas, and restricted gear areas. Additional areas in the Gulf of Maine and Georges Bank are closed on an intermittent basis.

Northeast Multispecies Closed and Restricted Areas



4.2.6 Interaction between Gear and Target Species

The analysis of interactions between gear and allocated species is based on catch information for the Northeast Multispecies FMP Common Pool fishery from FY 1996 through FY 2006 as presented in GARM III. Historic landings for select target species by gear type from FY 1996 through FY 2006 (Table 10) show that the majority of fish of all species are caught with trawls. Only cod and white hake are caught in significant numbers by gillnets. Only haddock are caught in significant numbers by hook and line.

Table 10. Historic landings for groundfish species by gear type from Fishing Year 1996 to Fishing Year 2006 in metric tons (mt) as presented in GARM III.

Stock/species	Trawl	Large-mesh trawl discards	Small-mesh trawl discards	Gillnet	Gillnet discards	Hook/ line	Hook/ line discards	Scallop dredge	Scallop dredge discards	Other	Other discards	Total discards	Total landings
Georges Bank Cod		2,742	551						170			2,862	73,806
Georges Bank Haddock	38,989	3,950		883	61	2,461	380		31	297		4,423	42,626
Georges Bank Yellowtail Flounder		1,280	134						2,562			3,976	27,960
So. New England/Mid-Atlantic Yellowtail Flounder		725	129						1,119			1,972	7,968
Gulf of Maine/Cape Cod Yellowtail Flounder		1,123	33		510				944			2,611	15,796
Gulf of Maine Cod	22,435	5,301		17,532	4,036					3,639		9,337	43,606
Witch Flounder		1,911	469								71	2,481	27,031
American Plaice		3,059	1,237								350	4,533	31,031
Gulf of Maine Winter Flounder	4,479	259	54	1,346	163					168		476	5,993
So. New England/Mid-Atlantic Winter Flounder[a]												1,481	31,146
Georges Bank Winter Flounder	18,202	169	47					210	418	135		634	18,546
White Hake	22,532			9,355	239					2,191		2,173	32,547
Pollock												N/A	51,568

Table 10. (continued)

Stock/species	Trawl	Large-mesh trawl discards	Small-mesh trawl discards	Gillnet	Gillnet discards	Hook/ line	Hook/ line discards	Scallop dredge	Scallop dredge discards	Other	Other discards	Total discards	Total landings
Acadian Redfish												6,200	4,115
Ocean Pout[a]												5,165	207
Gulf of Maine Haddock	6,396	5	0.49	1,091	1					969	2		8,456
Atlantic Halibut[a]												157	138
Gulf of Maine/Georges Bank Windowpane[a]	1,966	3,584	403	4				3	615	7		4,850	1,978
Southern New England/Mid-Atlantic Windowpane[a]	1,071	1,762	433	3				1	1,004	18		3,197	1,093
Atlantic Wolffish[b]													

Notes:
[a] as adopted by the NEFMC June, 2009
[b] provisionally added to list of stocks not allocated

4.3 Other Species (non-groundfish incidental and bycatch species)

Species likely to be affected by the multispecies fishery include monkfish, skates, and spiny dogfish. These species have no allocation under the Northeast Multispecies FMP and are managed under separate FMPs. The discussion in this section is limited to these three groups of fish. Monkfish and skates are commonly landed when caught. Monkfish may be discarded when regulations or market conditions constrain the amount of the catch that could be landed. Spiny dogfish, which tend to be relatively abundant in catches, may be landed but are often the predominant component of the discarded bycatch. Full descriptions of the life histories and management plans for monkfish, skates, and spiny dogfish can be found in Framework 44.

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

Skate landings have been reported to be generally increasing since 2000. Due to insufficient information about the population dynamics of skates, there remains considerable uncertainty about the status of skate stocks. Thorny skates and smooth skates are currently considered overfished, but overfishing is not occurring. The landings and catch limits associated with Amendment 3 are considered to have an acceptable probability of promoting biomass growth and achieving the rebuilding (biomass) targets for thorny skates and smooth skates. Modest reductions in landings and a stabilization of total catch below the median relative exploitation ratio is expected to cause skate biomass and future yield to increase.

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

4.3.1 Interaction between Gear and Incidental Catch Species

The analysis of interactions between gear and non-allocated species and by catch is based on catch information for the Northeast Multispecies FMP Common Pool fishery from FY 1996 to FY 2006. The Final Supplemental Environmental Impact Statement (FSEIS) to Amendment 2 (NEFMC and MAFMC 2003) evaluated the potential adverse effects of gears used in the directed monkfish fishery for monkfish and other federally-managed species and the effects of fishing activities regulated under other federal FMPs on monkfish. The two gears used in the directed monkfish fishery are bottom trawls and bottom gill nets which are described in detail in Section 1.2.1 of Appendix 2 to Amendment 2 to the Monkfish FMP (NEFMC and MAFMC 2003).

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

Of the non-allocated target species considered in the EA, dogfish have the potential for an interaction with all gear types expected to be used by the groundfish fleet. Historic landings by groundfish vessels for non-allocated target species from FY 1996 to FY 2007 (Table 11) show that the majority of fish of all species are caught with otter trawls.

Table 11. Historic Landings (mt) for other species by gear type from Fishing Year 1996 to Fishing Year 2006[a]

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

Notes:
[a] monkfish 1997-2006, skates 1996-2006, dogfish 1996-2005
[b] discards not available for other gear
Source: Northeast Data Poor Stocks Working Group 2007; Sosebee et al. 2008; NEFSC 2006b.

4.4 Protected Resources

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

4.4.1 Species Present in the Area

Table 12 lists the species, protected either by the ESA, the MMPA, or both, that may be found in the environment that would be utilized by the groundfish fishery.

Table 12. Species protected under the Endangered Species Act and Marine Mammal Protection Act that may occur in the operations area for the groundfish fishery.

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

Table 12 (continued) Species protected under the Endangered Species Act and Marine Mammal Protection Act that may occur in the operations area for the groundfish fishery.	
Species	**Status**
Sea Turtles	
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered[b]
Loggerhead sea turtle (*Caretta caretta*)	Threatened
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Pagophilus groenlandicus*)	Protected
Hooded seal (*Cystophora cristata*)	Protected

Note:

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

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

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

4.4.2 Species Potentially Affected

It is expected that the sea turtle, cetacean, and pinniped species discussed below have the potential to be affected by the operation of the multispecies fishery. Background information on the range-wide status of sea turtle and marine mammal species that occur in the area and are known or suspected of interacting with fishing gear (demersal gear including trawls, gillnets, and longline types) can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; Marine Turtle Expert Working Group (TEWG) 1998, 2000; NMFS and USFWS 2007a, 2007b; Leatherback TEWG 2007), recovery plans for ESA-listed cetaceans and sea turtles (NMFS 1991, 2005; NMFS and USFWS 1991a, 1991b; NMFS and USFWS 1992), the marine mammal stock assessment reports (e.g., Waring et al. 2006; 2007), and other publications (e.g., Clapham et al. 1999, Perry et al. 1999, Best et al. 2001, Perrin et al. 2002).

4.4.2.1 Sea Turtles

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

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

4.4.2.2 Large Cetaceans

The most recent Marine Mammal Stock Assessment Report (SAR) (Waring et al. 2009) reviewed the current population trend for each of these cetacean species within

U.S. EEZ waters, as well as providing information on the estimated annual human-caused mortality and serious injury, and a description of the commercial fisheries that interact with each stock in the U.S. Atlantic.

Information from the SAR is summarized below. The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the Gulf and Maine and Georges Bank, and low latitude winter calving grounds (Perry et al. 1999, Kenney 2002). However, this is an oversimplification of species movements, and the complete winter distribution of most species is unclear (Perry et al. 1999, Waring et al. 2009). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993, Wiley et al. 1995, Perry et al. 1999, Brown et al. 2002). Blue whales are most often sighted on the east coast of Canada, particularly in the Gulf of St. Lawrence, and occurs only infrequently within the U.S. EEZ (Waring et al. 2002).

In comparison to the baleen whales, sperm whale distribution occurs more on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2006). However, sperm whales distribution in U.S. EEZ waters also occurs in a distinct seasonal cycle (Waring et al. 2006). Typically, sperm whale distribution is concentrated east-northeast of Cape Hatteras in winter and shifts northward in spring when whales are found throughout the Mid-Atlantic Bight (Waring et al. 2006). Distribution extends further northward to areas north of Georges Bank and the Northeast Channel region in summer and then south of New England in fall, back to the Mid-Atlantic Bight (Waring et al. 1999).

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

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

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

4.4.2.3 Small Cetaceans

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

4.4.2.4 Pinnipeds

Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona et al. 1993, Waring et al. 2009). Gray seals are the second most common seal species in U.S. EEZ waters, occurring primarily in New England (Katona et al. 1993; Waring et al. 2009). Pupping for both species occurs in both U.S. and Canadian waters of the western north Atlantic with the majority of harbor seal pupping likely occurring in U.S. waters and the majority of gray seal pupping in Canadian waters, although there are at least three gray seal pupping colonies in U.S. waters as well. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring et al. 2006). Both species have a seasonal presence in U.S. waters from Maine to New Jersey, based on sightings, stranding, and fishery bycatch (Waring et al. 2009).

4.4.2.5 Species Not Likely to be Affected

NMFS has determined that the action being considered in the EA is not likely to adversely affect shortnose sturgeon, the Gulf of Maine distinct population segment (DPS) of Atlantic salmon, hawksbill sea turtles, blue whales, or sperm whales, all of which are listed as endangered species under the ESA. Shortnose sturgeon and salmon belonging to the Gulf of Maine DPS of Atlantic salmon occur within the general geographical areas fished by the multispecies fishery, but they are unlikely to occur in the area where the fishery operates given their numbers and distribution. Therefore, none of these species are likely to be affected by the groundfish fishery. The following discussion provides the rationale for these determinations. Although there are additional species that may occur in the operations area that are not known to interact with the specific gear types that would be used by the groundfish fleet, impacts to these species are still considered due to their range and similarity of behaviors to species that have been adversely affected.

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

The wild populations of Atlantic salmon found in rivers and streams from the lower Kennebec River north to the U.S. - Canada border are listed as endangered under the ESA. These populations include those in the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot Rivers and Cove Brook. Juvenile salmon in New England rivers typically migrate to sea in May after a 2- to 3-year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn. Results from a 2001 post-smolt trawl survey in Penobscot Bay and the nearshore waters of the Gulf of Maine indicate that Atlantic salmon post-smolts are prevalent in the upper water column throughout this area in mid- to late May. Therefore, commercial fisheries deploying small-mesh active gear (pelagic trawls and purse seines within 10 m of the surface) in nearshore waters of the Gulf of Maine may have the potential to incidentally take smolts. However, it is highly unlikely that the approval of this EA would affect the Gulf of Maine DPS of Atlantic salmon given that operation of the groundfish fishery would not occur in or near the rivers where concentrations of Atlantic salmon are likely to be found and groundfishing gear used by the fleet operates in the ocean at or near the bottom rather than near the water surface. Thus, this species is not considered further in this EA.

The hawksbill turtle is uncommon in the waters of the continental U.S. Hawksbills prefer coral reefs, such as those found in the Caribbean and Central America. Hawksbills feed primarily on a wide variety of sponges but also consume bryozoans, coelenterates, and mollusks. The Culebra Archipelago of Puerto Rico contains especially important foraging habitat for hawksbills. Nesting areas in the western North Atlantic include Puerto Rico and the Virgin Islands. There are accounts of hawksbills in south Florida and individuals have been sighted along the east coast as far north as Massachusetts; however, east coast sightings north of Florida are rare (NMFS 2009a). Since operation of the multispecies fishery would not occur in waters that are typically used by hawksbill sea turtles, it is highly unlikely that its operations would affect this turtle species.

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

Unlike blue whales, sperm whales do regularly occur in waters of the EEZ. However, the distribution of the sperm whales in the EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2006). In contrast, the multispecies fishery would operate in continental shelf waters. The average depth of sperm whale sightings observed during the CeTAP surveys was 1792 m (CeTAP 1982). Female sperm whales and young males almost always inhabit open ocean, deep water habitat with bottom depths greater than 1000 m and at latitudes less than 40° N (Whitehead 2002). Sperm whales feed on large squid and fish that inhabit the deeper ocean regions (Perrin et al. 2002). Given that sperm whales are unlikely to occur in areas (based on water depth) where the groundfish fishery would operate, and given that the operation of the fishery would not affect the availability of sperm whale prey or areas where calving and nursing of young occurs, the Proposed Action would not be likely to adversely affect sperm whales.

Although large whales and marine turtles may be potentially affected through interactions with fishing gear, NMFS has determined that the continued authorization of the multispecies fishery would not have any adverse effects on the availability of prey for these species. Right whales and sei whales feed on copepods (Horwood 2002, Kenney 2002). The multispecies fishery would not affect the availability of copepods for foraging right and sei whales because copepods are very small organisms that would pass through multispecies fishing gear rather than being captured in it. Humpback whales and fin whales also feed on krill as well as small schooling fish (e.g., sand lance, herring, mackerel) (Aguilar 2002, Clapham 2002). Multispecies fishing gear operates on or very near the bottom. Fish species caught in multispecies gear are species that live in benthic habitat (on or very near the bottom) such as flounders versus schooling fish such as herring and mackerel that occur within the water column. Therefore, the continued authorization of the multispecies fishery would not affect the availability of prey for foraging humpback or fin whales. Moreover, none of the turtle species are known to feed upon groundfish.

4.4.3 Interactions Between Gear and Protected Resources

Commercial fisheries are categorized by NMFS based on a two-tiered, stock-specific fishery classification system that addresses both the total impact of all fisheries on each marine mammal stock as well as the impact of individual fisheries on each stock. The system is based on the numbers of animals per year that incur incidental mortality or serious injury due to commercial fishing operations relative to a stock's Potential Biological Removal (PBR) level (the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population). Tier 1 takes into account the cumulative mortality and serious injury to marine mammals caused by commercial fisheries while Tier 2 considers marine mammal mortality caused by the individual fisheries; Tier 2 classifications are used in this EA to indicate how each type of gear proposed for use in the Proposed Action may affect marine mammals (NMFS 2009b). Table 27 identifies the classifications used in the List of Fisheries (LOF) proposed for FY 2010 (50 CFR 229), which are broken down into Tier 2 Categories I, II, and III).

Table 13. Descriptions of the Tier 2 Fishery Classification Categories

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

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

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

Table 14 lists the marine mammals known to have had interactions with sink gillnets, bottom trawls, and bottom longlines within the Gulf of Maine and Georges Bank, as excerpted from the proposed LOF for FY 2010 (also see Waring et al. 2009). Northeast sink gillnets have the greatest potential for interaction with protected resources, followed by bottom trawls. Impacts to protected resources through interaction with bottom longline gear are not known within the operations area; however, interactions between the pelagic longline fishery and both pilot whales and Risso's dolphins led to the development of the Pelagic Longline Take Reduction Plan.

Table 14. Marine Mammals Impacts Based on Groundfishing Gear and Northeast Multispecies Fishing Areas (Based on 2010 List of Fisheries)

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

Table 14 (continued)

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

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

Although sea turtles have been caught and injured or killed in multiple types of fishing gear, including gillnets and hook and line fishing, mortalities from these gear types account for only about 50 percent of the mortalities associated with trawling gear (NMFS 2009c). A study conducted in the mid-Atlantic region showed that bottom trawling accounts for an average annual take of 616 loggerhead sea turtles, although Kemp's ridleys and leatherbacks were also caught during the study period (Murray 2006). Sea turtles generally occur in more temperate waters than those in the Northeast multispecies area. Gillnets are considered more detrimental to marine mammals such as pilot whales, dolphins, porpoises, and seals, as well as large marine whales; however, protection for marine mammals would be provided through various Take Reduction Plans outlined above.

4.5 Human Communities/Social-Economic Environment

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

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

4.5.1 Overview of New England Groundfish Fishery

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

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

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

In the early 1960's, fishing pressure increased with the discovery of haddock, hake, and herring off of Georges Bank and the introduction of foreign factory trawlers. Foreign effort levels remained elevated until the passage of the Magnuson Fishery Conservation and Management Act in 1976. Early in this time period, landings of the principal groundfish (cod, haddock, pollock, hake, and redfish) peaked at about 650,000 tons. However, by the 1970's, landing decreased sharply to between 200,000 and 300,000 tons as the previously virgin GB stocks were exploited (NOAA 2007).

The exclusion of the foreign fishermen in 1976, coupled with technological advances and some strong classes of cod and haddock, caused a rapid increase in the number and efficiency of U.S. vessels participating in the Northeast groundfish fishery in the late 1970's. This shift resulted in a temporary increase in domestic groundfish landings; however overall landings continued to trend downward from about 200,000 tons to about 100,000 tons through the mid 1980s (NOAA 2007). In 1986, NEFMC implemented the Northeast Multispecies FMP with the goal of rebuilding stocks. From that time, the multispecies fishery has been administered as a limited access fishery managed through a variety of effort control measures including DAS, area closures, trip limits, minimum size limits, and gear restrictions. Partially in response to those regulations, landing decreased throughout the latter part of the 1980s until reaching a more or less constant level of around 40,000 tons annually since the mid 1990's.

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

Through Amendment 16, NEFMC sought to rewrite groundfish sector policies with a scheduled implementation date of May 1, 2009. When that implementation date was delayed until FY 2010, the NMFS Regional Administrator announced that, in addition to a previously announced 18 percent reduction in DAS, interim rules would be implemented to reduce fishing mortality during FY 2009. These interim measures generally reduced opportunity among groundfish vessels through differential DAS counting, elimination of the SNE/MA winter flounder SAP, elimination of the state waters winter flounder exemption, revisions to incidental catch allocations and a reduction in some groundfish allocations (NOAA 2009a).

In 2007, the Northeast multispecies fishery included 2,515 permits, about 1,500 of which are limited access, and about 690 active fishing vessels. Those vessels include a range of gear types including hook, bottom longline, gillnet, and trawlers (NEFMC 2009a). In FY 2009, between 40 and 50 of these vessels were members of the Georges Bank Cod Sectors. In FY 2010, approximately 762 vessels are associated with a sector. The remaining vessels are Common Pool groundfishing vessels.

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

Many groundfish captains and crew are second- or third-generation fishermen who hope to pass the tradition on to their children. This occupational transfer is an important component of community continuity as an important alternative occupation in these port areas, tourism, is largely seasonal.

There is little hard socio-economic data upon which to evaluate the regional or community specific importance of the multispecies fishery. In addition to the direct employment of captains and crew, the industry is known to support ancillary businesses such as gear, tackle, and bait suppliers; fish processing and transportation; marine construction and repair; and restaurants. The perceived importance of these economic interrelationships is reflected by the creation of the Cape Cod regional competitiveness council, government recommendations that NEFMC begin compiling the data necessary to evaluate the importance of the fishery to the regional economy, and the inclusion of social and economic impact analysis in the NEFMC research priorities and data needs 2009-2013.

4.5.2 Multispecies Fleet Home Ports

Mulitspecies fleet home ports are described in detail in Amendment 16 (NEFMC 2009a) and Framework 44. The descriptions include a discussion on history and commercial fishing activities for each of these ports. The primary source of information for these descriptions is the Community Profiles for Northeast US Fisheries, by NEFSC (2009).

4.5.3 Economic Status of Commercial Groundfish Harvesting Sector

4.5.3.1 DAS Allocation and Use

The number of Category A DAS allocated to the multispecies fleet generally declined in FY 2004 – 2008 (Table 15). Just over 50,000 days were allocated in 2005, and slightly less than 44,000 were allocated in 2008. DAS allocated to vessels that called in to the DAS program decreased by an even greater amount – from over 37,000 in 2005 to under 26,000 in 2008. The number of permitted DAS vessels in the time span decreased by 120 (from 1,320 to 1,200), and the number of vessels that called in decreased by an even greater amount (from 685 to 512). Despite fewer DAS allocated and fewer boats fishing, the number of DAS used remained relatively constant in FY 2005 – 2008. In those years, the fewest days (30,847) were used in 2008, and the largest number of days (32,804) was used in 2007 (Table 43). These values reflect the DAS charged and do not take into account differential DAS counting (adopted in FY 2006). As a result, the number of DAS charged in FY 2006 does not bear the same relationship to time underway as the number charged in earlier years. The actual DAS underway on Category A DAS for FY 2006 – FY 2008 was about 25,000 (FY 2006), 25,314 in FY 2007, and 25,529 in FY 2008.

Table 15. Multispecies Limited Access A Days-at-Sea Used by Multispecies Permit Category, FY 2005-2008

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

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

4.5.3.2 Landings and Revenues

The commercial harvesting sector may be described as a function of its multiple components, including gear types, vessels, and communities. In this section, activity in the commercial sector is characterized in terms of permit category, vessel length class, homeport state, and port group. Information on recent pollock landings and revenue is in Section 4.2. Because of the way in which the data is queried for each of these descriptive approaches, total numbers of vessels, landings and revenues may differ slightly among the four sections. In some cases information cannot be reported due to data confidentiality provisions. Where such anomalies occur, we have attempted to provide a clear explanation. Revenue is reported as gross revenue and does not take into account the changes in fixed and operating costs over time (net revenue).

Landings and revenues by fishing year were summarized in Amendment 13, FW 40A, FW 40B, FW 41, FW 42, and Amendment 16. This section updates this information for FY 2004 through 2008. Minor differences exist between the information previously reported and this section due to updates to the databases and revisions to data queries (including the addition of Atlantic wolffish to the management unit). Most notably, nominal and constant groundfish revenues were incorrectly reported in Amendment 16 in Table 57 (NEFMC 2009) due to a data error; other tables were correct. The data are also reported in different categories than in previous reports in order to capture changes in permit categories and changes in landings and revenues in communities. Regulated groundfish (cod, haddock, yellowtail flounder, winter flounder, witch flounder, windowpane flounder, plaice (dabs), pollock, redfish, Atlantic halibut, white hake, red/white hake mixed, and Atlantic wolffish) and ocean pout landings and revenues are summarized in Table 16. This table includes all landings reported to the NMFS dealer database system, regardless of whether the landings can be attributed to a multispecies permit. It includes aggregate landings reported by states and landings that cannot be attributed to a permit as well as landings by vessels that did not possess a federal multispecies permit (i.e. landings from state registered vessels fishing in state waters). Regulated groundfish landings declined from 80 million pounds in FY 2004 to 50 million pounds (landed weight) in FY 2006, or 37 percent, before increasing to 68 million pounds in FY 2008. Nominal revenues decreased 9 percent from FY 2004 ($84.6 million) to FY 2006 ($76.9 million) and then rebounded to $85 million in FY 2008. Revenues in constant 1999 dollars declined 13 percent, from $73.9 million in FY 2004 to $64.3 million in FY 2008. The average price, in both nominal and constant dollar terms, peaked in FY 2006, the year with the lowest landed weight. By FY 2008, in terms of constant dollars the price declined to less than a dollar per pound. The sections following this table summarize landings and revenues for groundfish permit holders only.

Table 16. Total groundfish landings and revenues, FY 2004 – FY 2008

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

4.5.3.2.1 Landings and Revenues by Groundfish Permit Category

As mentioned earlier, the information in the following sections is reported for groundfish permits only. Total landings by groundfish permits declined from 509.9 million pounds in FY 2004 to 436 million pounds in FY 2006 before rebounding to 460.6 million pounds in FY 2008, a decline of 9.7 percent from FY 2004. For individual DAS permits, total landings declined from 244.9 million pounds in FY 2004 to 194.6 million pounds in FY 2007 before increasing to 210.6 million pounds in FY 2008, a decline of 14.1 percent from FY 2004. Revenue changes were similar; from FY 2004 to FY 2008 revenues (constant 1999 dollars) declined 7 percent for all permits and 12.5 percent for individual DAS permits (Table 17).

Groundfish landings by permitted vessels declined from 77.3 million pounds in FY 2004 to 48.4 million pounds in FY 2006 (-37 percent), then increased to 64.5 million pounds in FY 2008 (-14%). Groundfish revenues did not show as large an initial reduction, declining from $71.3 million in FY 2004 to $62.5 million in FY 2006, a decline of 12 percent. In spite of the increase in landed weight from FY 2006 to FY 2008 revenues actually declined slightly to $62.3 million, or 13 percent less than FY 2004. Individual DAS permits did slightly better, with FY 2004 revenues of $66.9 million declining 9 percent to $60.5 million in FY 2006, and declining again to $59.5 million in FY 2008, 11 percent less than in FY 2004 (Tables 18 and 19).

When comparing total revenues and groundfish revenues for individual DAS permit holders it is clear that groundfish is only a portion of the revenue generated by these fishing businesses. In all years, groundfish revenues were 37 to 42 percent of the revenues generated by groundfish permits. In recent years about half the individual DAS permits earn less than 25 percent of their revenues from groundfish. These revenues can be earned on groundfish trips or on trips in other fisheries. During this period there are 1,071 individual DAS permits with a landings record of any species in the dealer database. The percentage of these permits with no groundfish revenues increased from 22 percent in FY 2004 to 30 percent in FY 2008, even as the total number of permits landing groundfish also declined. The percentage earning 75 percent or more of their revenues from groundfish has remained fairly constant at between 20 and 25 percent (Table 21), but the number has declined. Because of the importance of other revenues, total revenues are also examined for this fishery.

The contribution of different species to landings and revenues are illustrated in Figure 4 and Figure 5. In terms of landed weight, cod, haddock and pollock were major components of the fishery throughout the time period. Yellowtail flounder was a major component in FY 2004 and 2005, but increasingly restrictive TACs for GB yellowtail flounder have reduced the contribution of that species to landings. Cod is the most valuable species in terms of nominal revenue, with pollock and haddock the other key components. Yellowtail, winter, and witch flounder contribute similar proportions to revenues.

Table 17. Total landings by groundfish permit category, FY 2004 – FY 2008

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

Table 18. Total revenues (constant 1999 dollars) by groundfish permit category, FY 2004 – FY 2008

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

Table 19. Groundfish landings (lb landed weight) by groundfish permit category

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

Table 20. Groundfish revenues (constant 1999 dollars) by groundfish permit category

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

Table 21. Groundfish as a percent of total revenues, FY 2004 - FY 2008 for Individual DAS permits only

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

Figure 3. Multispecies landings by species, FY 2004 – FY 2008

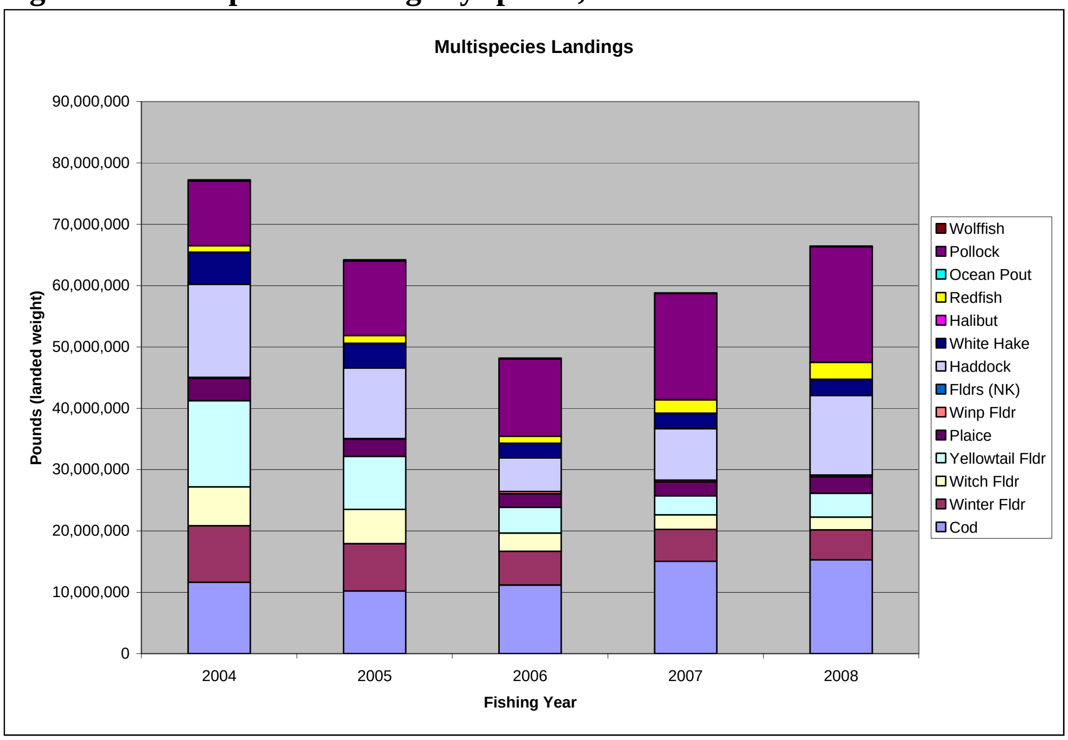
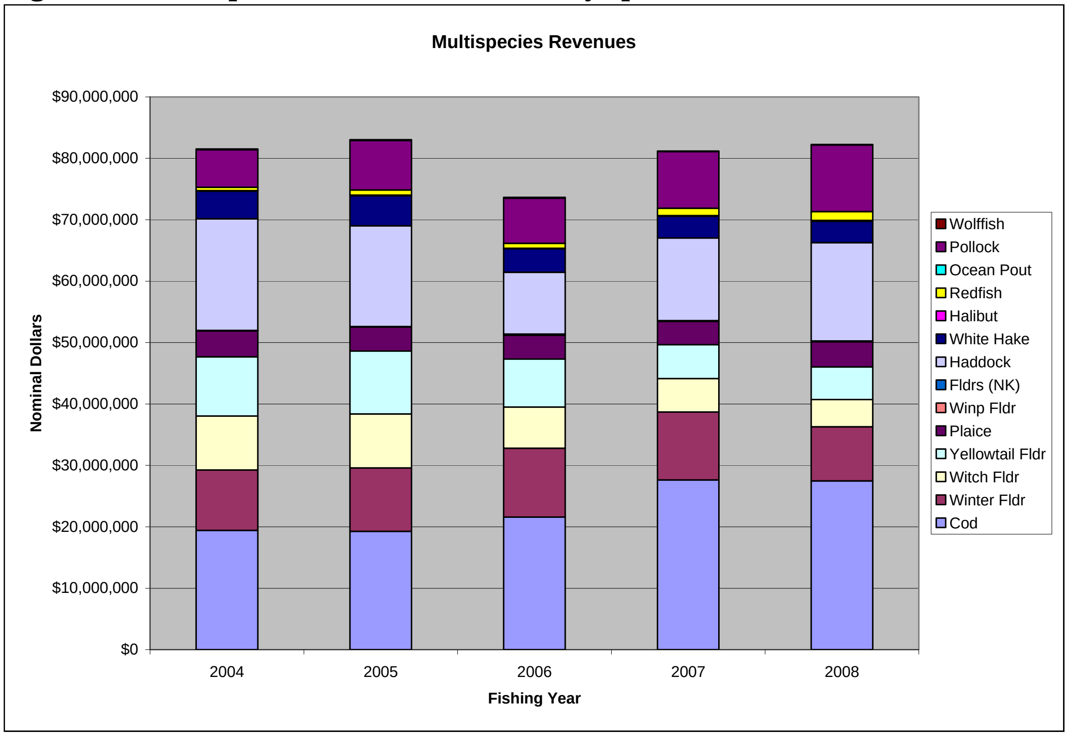


Figure 4. Multispecies nominal revenues by species, FY 2004 – FY 2008



The number of permits landing groundfish declined from 961 in FY 2004 to 686 in FY 2008. These values include landings by all permit categories. Over 95 percent of groundfish landings are by vessels in the individual DAS permit category. These permits are often considered the core of the fishery and the following discussions will highlight the changes for this group. The number of these permits landing groundfish declined from 691 in FY 2004 to 505 in FY 2008, a decline of 27 percent since the implementation of Amendment 13. At the same time, the groundfish revenues per permit increased in this category from $97.7 thousand in FY 2004 to $117.8 thousand in FY 2008 (constant 1999 dollars, Table 22 and Table 23).

Table 22. Number of permits landing groundfish, FY 2004 – FY 2008

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

Table 23. Groundfish revenues (constant 1999 dollars) per permit

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

4.5.3.2.2 Landings and Revenues by Length Class

When groundfish landings and revenues (constant 1999 dollars) are examined by vessel length, it is clear that vessels less than 30 feet in length have become an inconsequential component of the fishery since FY 2004, accounting for less than one-tenth of a percent of landings in FY 2008. Vessels between 30 and 50 feet in length actually increased groundfish landings (+28 percent) and revenues (+14 percent) from FY 2004 to FY 2008, the only vessel size class to do so. Vessels between 50 and 75 feet saw landings decline by 30.5 percent and revenues decline by 21.8 percent. Vessels 75 feet and over saw landings decline by 18.3 percent and revenues decline by 19.5 percent. These changes are somewhat surprising, as many believed that the smaller vessels size class (30-50 feet) would suffer the most from the differential DAS counting measures adopted in FW 42 (Table 24).

Table 24. Groundfish landed weight and constant (1999) dollars by vessel length class

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

4.5.3.2.3 Landings and Revenues by Homeport State

Each permit holder declares a homeport state on all permit applications. When evaluating impacts of regulations on individual states, summarizing landings and revenues by these homeport states may indicate differential impacts under the assumption that the economic benefits of fishing activity return primarily to these homeport states. Landings and revenues by homeport state are shown in Table 25 and Table 26. Vessels claiming Maine, New Hampshire, Massachusetts, or Rhode Island as homeport state landed 96 percent of the groundfish in FY 2008, a slight increase from the 93 percent landed in FY 2004. Of these four states, only New Hampshire vessels increased groundfish landings from FY 2004 to FY 2008 by 1.9 million pounds, or 56 percent. In FY 2008 Maine vessels landed 98 percent of the groundfish they landed in FY 2004, while Massachusetts vessels landed 87 percent of what was landed in FY 2004. Groundfish landings by Rhode Island vessels declined to 43 percent of the FY 2004 value. Again, these changes are somewhat surprising in that the inshore differential DAS area in the GOM was expected to reduce groundfish landings for New Hampshire vessels. Revenue changes differed only slightly from the changes in groundfish landed weight with the exception of Rhode Island, where the 57 percent decline in landings led to only a 38 percent decline in groundfish revenues.

But as previously noted revenues (constant 1999 dollars) from other fisheries are key components of the income for permit holders. When total revenues by homeport state are examined for the core groundfish vessels - the Individual DAS permits – a different picture emerges. From FY 2004 to FY 2008, total revenue declines were similar for individual DAS permits claiming homeport states of Maine (-11 percent), Massachusetts (-12 percent), and Rhode Island (-13 percent). Total revenues for New Hampshire permits increased by 13 percent (Table 26).

Table 25. Groundfish landings by homeport state, FY 2004 – FY 2008

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

Table 26. Groundfish revenues (constant 1999 dollars) by homeport state, FY 2004 – FY 2008

Homeport State	2004	2005	2006	2007	2008
CT	$54,177	$12,362	$155,887	$280,790	$245,458
ME	$10,822,914	$12,050,536	$9,366,964	$10,186,039	$10,406,038
MA	$48,164,703	$47,268,256	$41,237,285	$42,624,942	$41,263,324
NH	$3,276,638	$3,184,183	$2,665,476	$3,534,547	$5,182,273

RI	$4,838,032	$5,613,998	$5,527,044	$4,924,134	$3,018,019
NJ	$662,121	$636,116	$873,485	$805,938	$473,936
NY	$1,605,484	$1,633,937	$1,509,486	$1,282,188	$924,186
NC	$914,559	$1,021,951	$616,740	$466,787	$407,811
OTHER	$962,629	$805,639	$565,236	$378,248	$381,566
Grand Total	$71,301,257	$72,226,979	$62,517,603	$64,483,613	$62,302,610

Table 27. Total revenues for individual DAS permit holders, FY 2004 – FY 2008

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

4.5.3.2.4 Landings and Revenues by Port Group

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

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

As with revenues by homeport state, the total revenues for individual DAS permits differs from the changes noted for groundfish revenues. Gloucester/North Shore and Boston/South Shore show a 32 percent and 48 percent increase in total revenues for individual DAS permits. Coastal NH showed a 23 percent decline, while Lower Mid-

Coast Maine experienced a 58 percent decline in total revenues for individual DAS vessels. New Bedford experienced a 22 percent decline. Most other port groups experienced declines as well.

4.5.3.2.5 Summary

Several broad themes emerge from an examination of the landings and revenue data. First, contrary to expectations, some ports in the inshore GOM have weathered recent regulatory restrictions relatively well - Gloucester/North Shore and Boston/South Shore in particular. These two ports increased groundfish landings and revenues since FY 2004, while the expectation from FW 42 was that there would be declines. It appears that these increases may have occurred in part at the expense of other ports, such as those in Maine. Second, again contrary to the common wisdom, vessels in the 30 to 50 foot range have also increased their groundfish landings and revenues. The expectation from FW 42 was that this group would be hampered by the stringent regulations in the inshore GOM, particularly the differential DAS counting areas. Third, there is evidence of the concentration of groundfish landings into fewer port groups, driven by the increase in importance of Gloucester and Boston. Fourth, the number of permits landing groundfish continues to decline. The decline in permits and the concentration of groundfish landings in key ports may have implications for social and community impacts as the fishery shifts to sectors with the adoption of Amendment 16. Finally, the regulatory restrictions designed to control groundfish landings have also tended to reduce total landings and revenues for the individual DAS permit holders.

Table 28. Groundfish landings by port group, FY 2004 – FY 2008

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

Table 29. Groundfish revenues (constant 1999 dollars) by port group, FY 2004 – FY 2008

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

Table 30. Total revenues for individual DAS permits, FY 2004 – FY 2008

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

4.5.4 Status of Groundfish Sector Membership

Amendment 16 established 17 new sectors and reauthorized the two existing sectors. People who held groundfish permits were required to sign up for sectors by September 1st, 2009. The following section presents an overview of sector membership as of May 1, 2010. Roughly half of the groundfish permits have chosen to remain in the common pool (715 of 1477). The sector with the greatest number of permits is the Sustainable Harvest Sector (116 permits), followed by the GB Cod Fixed Gear Sector (94 permits). The NEFS XII has the smallest number of permits with 7 (Table 31).

Table 31. Status of Sector Membership as of May 1, 2010

SECTOR NAME	Number of Permits
GB Cod Fixed Gear Sector	94
Northeast Coastal Communities Sector	18
NEFS II	77
NEFS III	72
NEFS IV	46
NEFS IX	51
NEFS V	37
NEFS VI	17
NEFS VII	26
NEFS VIII	22
NEFS X	40
NEFS XI	48
NEFS XII	7
NEFS XIII	31
Port Clyde Community Groundfish Sector	41
Sustainable Harvest Sector	116
Tri-State Sector	19
Grand Total	762

NEFS: Northeast Fishery Sectors

Description of Commercial Pollock Fishery

Catches:

Pollock were traditionally landed as bycatch in various demersal otter trawl fisheries, but directed otter trawl effort increased during the 1980s, peaking in 1986 and 1987. Directed effort by US trawlers declined in the 1990s and early 2000's, but there have been recent increases in landings that may reflect increased targeting of pollock. Similar trends have also occurred in the U.S. winter gillnet fishery. U.S. commercial landings increased from approximately 4,000 mt per year in the late 1960s to a peak of 24,000 mt in 1986. Landings rapidly decreased to 4,000 mt in 1996, and generally increased to 10,000mt in 2008. Historical landings were primarily from trawl fisheries, but contributions from gillnet fisheries generally increased, and the recent fishery has had nearly equal contributions from trawl and gillnet fisheries. Commercial discards were estimated for years 1989 to 2008 (data were not available for 2009, so an assumed value equal to 2008 discards was used). The estimates of discards ranged from 1% to 8% of US commercial landings, with an average of 3% for all years estimated. The four fleets that account for nearly all pollock discards were small-mesh otter trawl, large-mesh otter trawl, large-mesh gillnet, and extra-large mesh gillnet. The time series of recreational catch is highly variable from year to year. Recreational catch peaked at 1,867 mt in 2008, which is consistent with fishermen's accounts of encountering large numbers of pollock in that year. However, recreational catch of fish decreased in 2009 to 896 mt. Recreational catch is small relative to commercial landings and has generally been 10% or less. However, from 2000-2004, recreational catch is estimated to have contributed 15-24% of total catch (commercial catch was near the lowest values in the time series for these same years). The working group chose to assume 100% mortality of discarded recreational catch. The 100% mortality assumption was selected because recreational discards were a minor component of the total catch when compared to commercial catch. This assumption is also consistent with the 100% discard mortality assumed for commercial discards. There are no recreational catch estimates from the statistically designed sampling program prior to 1981. The Working Group decided to assume negligible recreational catch prior to 1981, as there is no agreed method and scant data upon which to base hindcasted estimates. Furthermore, the magnitude in recent years is a minor component of total catch, and it is assumed that any recreational catch prior to 1981 would not have exceeded the recent amounts.

4.2 Recent Trends in the Fishery

Some notable recent trends in the commercial fishery are as follows: In recent fishing years, between 53% and 63% of commercial landings have been by otter trawl, with the remainder of landings by gillnet gear (NMFS preliminary statistics: http://www.nero.noaa.gov/ro/fso/mul.htm). Landings of pollock and associated revenue have increased since FY 2004, with the exception of a decline from FY 2008 to 2009, and most of the landings in recent years have been in Gloucester, followed by Portland, and Boston. The highest revenue during this time period was in FY 2008, with a total revenue of $ 10.9 million (from ME, NH, MA, and RI). The state with the most landings has been Massachusetts, and the average price per pound has been increasing over time, with an average price of $ 0.88 per pound in Boston and $ 0.59 per pound in Point Judith, in FY 2009. The total amount of pollock landed in the state of New York during this time period was less than 1 mt. Detailed information is contained below in Tables 32 through 35 and Figures 6 and 7.

Table 32. Commercial and Recreational Landings and Discards by Calendar Year

Calendar Year	Commercial Landings	Commercial Discards	Recreational Landings	[2]Recreational Discards
2004	5,070	103	669	241
2005	6,509	100	520	272
2006	6,067	69	571	252
2007	8,372	147	533	227
2008	9,965	362	941	926
2009	7,477	[1]362	468	420

[1]The value for commercial discards in 2009 was assumed to be equal to the value in 2008.
[2]Recreational discards were calculated assuming 100% discard mortality.

Table 33. Pollock Landings and Revenue by State and Fishing Year

	2004		2005		2006	
State	**lb**	**$**	**lb**	**$**	**lb**	**$**
ME	4,080,924	2,687,294	4,112,923	2,869,192	2,693,771	1,998,734
MA	5,242,837	2,673,152	6,420,925	4,121,427	7,660,957	4,431,719
NH	1,356,579	815,382	1,727,645	1,128,717	2,195,890	1,108,952
RI	24,717	11,644	26,298	13,503	27,768	20,125
Totals	**10,705,057**	**6,187,472**	**12,287,791**	**8,132,839**	**12,848,386**	**7,559,530**

	2007		2008		2009	
State	**lb**	**$**	**lb**	**$**	**lb**	**$**
ME	3,301,819	1,851,037	3,539,338	2,282,620	2,770,192	2,155,951
MA	12,332,025	6,645,144	13,308,908	7,531,177	8,696,169	6,816,106
NH	1,766,983	772,656	2,136,300	1,080,814	1,761,485	1,235,645
RI	70,023	31,781	35,516	20,446	10,868	6,026
Totals	**17,470,850**	**9,300,629**	**19,020,062**	**10,915,057**	**13,238,714**	**10,213,728**

Based on dealer data, for data reported through 5/17/10; Fisheries Statistics Office

Table 34. Pollock Landings and Revenue by Port and Fishing Year

	2004		2005		2006	
Port	**lb**	**$**	**lb**	**$**	**lb**	**$**
Boston	654,165	358,590	943,598	620,551	1,004,519	771,339
Chatham	311,691	169,303	258,577	165,348	292,501	172,287
Gloucester	3,426,862	1,736,126	4,162,772	2,747,280	5,414,001	3,012,314
New Bedford	599,000	280,050	904,340	495,482	875,516	434,638
Point Judith	6,918	2,665	9,464	4,580	10,410	7,644
Portland	3,720,406	2,445,033	3,618,282	2,528,690	2,489,584	1,699,922
Portsmouth	803,219	487,948	748,163	533,236	1,060,690	588,338
Totals	**9,522,261**	**5,479,715**	**10,645,196**	**7,095,167**	**11,147,221**	**6,686,482**

	2007		2008		2009	
Port	**lb**	**$**	**lb**	**$**	**lb**	**$**
Boston	3,108,709	1,952,257	2,582,036	1,857,434	2,023,547	1,790,200
Chatham	262,248	140,833	586,251	317,038	636,917	404,949
Gloucester	8,046,290	3,988,740	8,873,196	4,694,741	4,953,182	3,695,118
New Bedford	857,881	536,535	1,141,506	575,474	971,530	824,797
Point Judith	32,009	14,011	21,441	12,798	8,028	4,713

Portland	2,997,996	1,675,786	3,402,138	2,193,190	2,450,363	1,924,352
Portsmouth	423,433	208,298	567,789	299,630	470,493	336,941
Totals	**15,728,566**	**8,516,460**	**17,174,357**	**9,950,305**	**11,514,087**	**8,981,070**

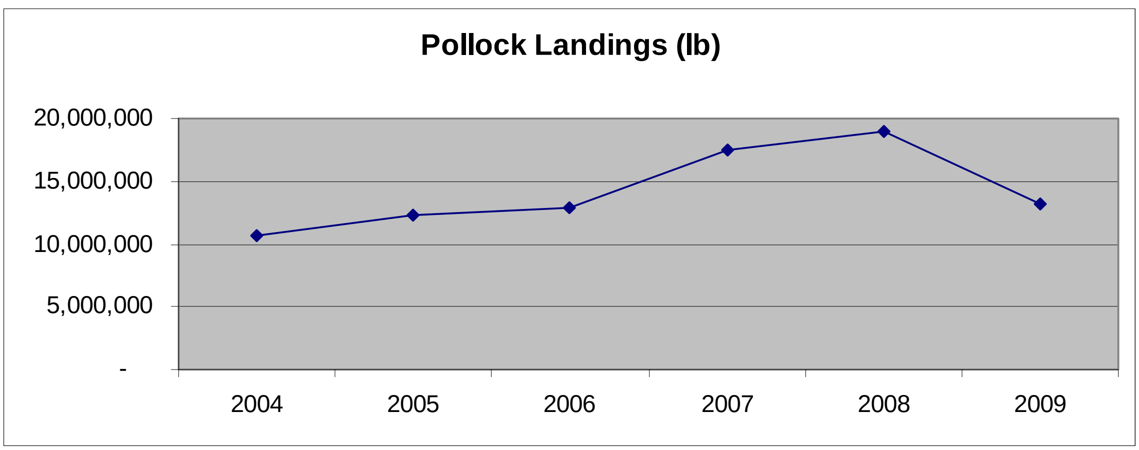
Based on dealer data, for data reported through 5/17/10; Fisheries Statistics Office

Table 35. Average Price Per Pound of Pollock by Port and Year

Port	2004	2005	2006	2007	2008	2009
Boston	$ 0.55	$ 0.66	**$ 0.77**	**$ 0.63**	**$ 0.72**	**$ 0.88**
Chatham	$ 0.54	$ 0.64	$ 0.59	$ 0.54	$ 0.54	$ 0.64
Gloucester	$ 0.51	$ 0.66	$ 0.56	$ 0.50	$ 0.53	$ 0.75
New Bedford	$ 0.47	$ 0.55	$ 0.50	**$ 0.63**	$ 0.50	$ 0.85
Point Judith	$ 0.39	$ 0.48	$ 0.73	$ 0.44	$ 0.60	$ 0.59
Portland	**$ 0.66**	**$ 0.70**	$ 0.68	$ 0.56	$ 0.64	$ 0.79
Portsmouth	$ 0.61	$ 0.71	$ 0.55	$ 0.49	$ 0.53	$ 0.72

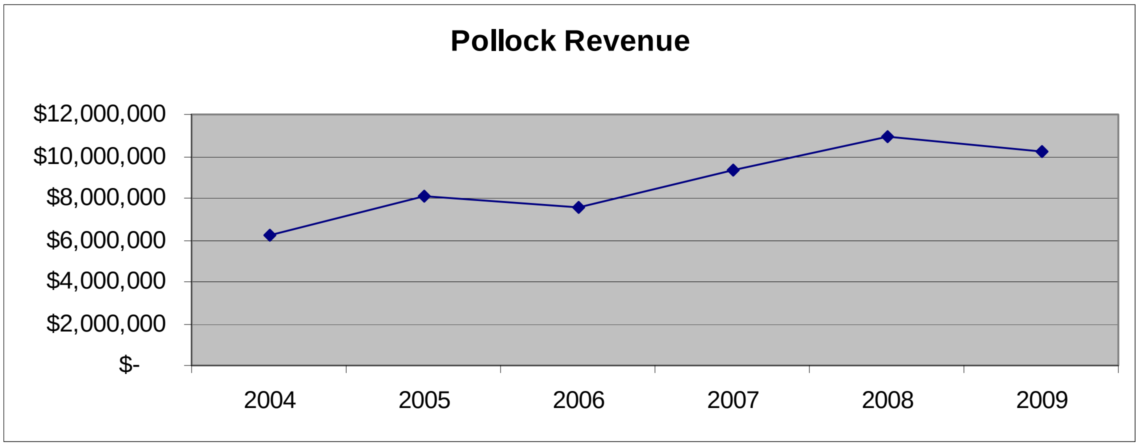
Based on dealer data, for data reported through 5/17/10; Fisheries Statistics Office

Figure 5. Pollock Landings (lb)



ME, NH, MA, RI; Based on dealer data, for data reported through 5/17/10; Fisheries Statistics Office

Figure 6. Pollock Revenue ($) for the states of ME, NH, MA, and RI.



ME, NH, MA, RI; Based on dealer data, for data reported through 5/17/10; Fisheries Statistics Office

5.0 Analysis of Impacts

In order to ensure timely analysis and implementation of this action, the impact analyses were conducted just prior to completion of the stock assessment peer review during the first week of June, 2010, based upon slightly smaller catch limits (e.g., ABC = 19,500 mt), than those generated during the assessment review (e.g., ABC = 19,800 mt). Therefore, the numbers in the tables of economic impacts are a slight underestimate of the revenue increases that may be anticipated. The conclusions of the biological, economic, and social impacts are not affected by the minor discrepancy between value of the analyzed catch limits and the value of the limits that are proposed.

5.1 Biological Impacts

5.1.1 Impacts on Groundfish and other species

5.1.1.1 No Action

Under the No Action Alternative described under Sections 3.1. and 3.2., no revisions would be made to the status determination criteria or any of the pollock catch limits for FY 2010 (OFL, ABC, Other sub-component, State Waters sub-component, Groundfish sub-ACL, Sector sub-ACL, Common pool sub-ACL, Sector ACEs, or Incidental Catch TAC). Those values would remain as specified by the Amendment 16 (status determination criteria) and FW 44 final rule as modified by the final rule that made revisions to FW 44 (75 FR 29459; May 26, 2010)(based on GARM III stock assessment as explained in Section 3.1 of this EA, and the final sector rosters), as shown in Table 2. It is likely that the No Action Alternative will constrain the catch of other stocks in addition to pollock, due to the relatively low catch limit and the constraining management measures that are triggered when catch limits are reached in either the common pool or sectors.

The two elements of the No Action Alternative (Status Determination Criteria and Catch Limits) are closely tied together, and cannot realistically be analyzed independently of each other. Both the Status Determination Criteria and Catch Limits for pollock are based upon the results of a stock assessment, and theoretically could remain the same based upon the old stock assessment (GARM III), or revised based upon the recent stock assessment (SAW 50). However, it would not be logical or consistent to revise one element and not the other. The MSA requires management measures to be based upon the best available scientific.

The No Action Alternative can be represented by the proposed action in the EA for FW 44 (Framework Adjustment 44, January 15, 2010). For pollock, no short-term projection of stock biomass, based upon a catch equal to the ABC was conducted (in contrast to the stocks that have an age-based assessment and age-based projection). Therefore there is not an estimate of the impact of this catch level on the stock biomass over time, based on the GARM III stock assessment.

If NMFS takes no action to revise the Status Determination Criteria and catch limits for FY 2010, it is highly likely that the Council would take an action to implement such revisions as soon as possible. Given the current understanding of the status of the stock (rebuilt), and the fact that the No Action pollock catch limits are well below the catch level associated with the maximum sustainable level of catch, the No Action alternative will have no negative biological impacts on the pollock stock.

5.1.1.2 Proposed Action (Preferred Alternative)

The revision to the Status Determination Criteria and annual catch limits will align current management measures with the best available scientific information. Revision to the FY 2010 catch limits will result in the possibility that substantially greater amount of pollock will be caught than under the No Action Alternative. The level of catch is consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). Both scientific and management uncertainty are accounted for in this catch level, so the risks of negative biological impacts have been minimized. Although the ABC of 19,800 mt is greater than the maximum sustainable yield (MSY) of 16,200 mt, the ABC is calculated based upon the current stock size (spawning stock biomass; SSB), which is estimated to be 196,000 mt. SAW 50 data indicate that if future pollock catch is at the level associated with 75% of Fmsy, the biomass is projected to remain well above Bmsy through 2017. Specifically the SSB will decline to about 120,000 mt by 2017.

The groundfish sub-ACL for pollock (common pool and sector sub-ACLs combined) of 16,553 mt is 502% greater than the No Action sub-ACL of 2,748 mt. Although theoretically, this amount of pollock could be caught (landings and discards), in reality, there will be other factors in the fishery that limit the amount of pollock caught. For the common pool such limiting factors include: Relatively low DAS allocations, limitations in the market for leasing DAS, limited ability of vessel owners to afford leased DAS; and low annual catch limits for other stocks that will constrain the fishery.

For sector vessels such factors include: Low pollock allocations based on historical catch as well other constraining stocks. A constraining stock is a stock for which the Annual Catch Limit (or Annual Catch Entitlement) is relatively low and due to the FMP rules, will constrain a vessels ability to fish.

A larger catch limit for pollock may result in greater catch of other stocks (monkfish, skates, and dogfish) in addition to pollock, as compared to the No Action Alternative, because it is not likely that pollock will serve as a constraining stock. Because all stocks have catch limits, and management measures designed to constrain catch, the additional fishing effort that could result from a larger pollock catch limit is not likely to negatively impact other groundfish stocks, or result in catch exceeding catch limits for other stocks. The revised pollock annual catch limits are expected to have little impact on the rate of bycatch, but could increase the net amount of bycatch slightly, if the increased catch limit enables vessels to increase their fishing effort.

5.1.2 Impacts on Protected Species

5.1.2.1 No Action

Under this alternative, there would be no change to the Status Determination Criteria or the FY 2010 catch levels. Because the Status Determination Criteria is an abstract specification, it would have no impact on protected resources. The No Action catch limits are consistent with the fishing mortality targets of Amendment 16, and the catch limits specified by FW 44. Because the annual catch limits would not change under the No Action Alternative, the No Action would not impact fishing opportunities or effort, and would not impact the interactions of groundfish gear with protected resources.

5.1.2.2 Proposed Action (Preferred Alternative)

Under this alternative, the Status Determination Criteria and the FY 2010 catch levels would be revised. Because the Status Determination Criteria is an abstract specification, it would have no impact on protected resources. The increase in pollock catch levels allowed would be substantial, and could result in limited additional fishing effort as compared to the No Action Alternative, as described in Section 5.1.2.1. In general, the impacts of the Proposed Alternative on protected resources will track the trend in fishing effort. An effect of an increase in fishing effort compared to the No Action Alternative would be to increase slightly the interactions of groundfish gear with protected resources. The scope of this increase with respect to the overall fishery is expected to be negligible.

It is difficult to predict the amount of fishing effort that will occur in FY 2010 due to the novelty and complexity of many aspects of the FMP. Although the amount of fishing effort associated with the Proposed Alternative will likely be greater than that associated with the No Action Alternative, the overall fishing effort in the groundfish fishery and effort targeting pollock will still likely be reduced compared with previous fishing years, due to the DAS restrictions and catch limits for all stocks implemented for FY 2010. It is highly unlikely that the amount of fishing effort overall, or the amount of fishing behavior targeting pollock will be greater than the fishing effort in the fishery during recent years, due to the regulatory constrains. The opportunity for vessels to take advantage of and catch additional pollock, if they choose to target pollock may depend on whether a vessel is fishing in a sector or in the common pool.

With respect to the common pool, if a stock with a low ACL such as Gulf of Maine Winter Flounder triggers the Regional Administrator to implement restrictive in-season trip limits or modifications to the DAS counting rules for the common pool, the increase in fishing effort allowed by the larger pollock catch limit could be offset by these additional restrictions. For vessels fishing in sectors, if a sector vessel is required by its sector's rules to only catch the Potential Sector Contribution (PSC) associated with its permit, the increased ACL for pollock may or may not provide such a vessel increased fishing opportunity, depending upon the size of that PSC. The sector as a whole, may be afforded additional opportunity as a result of the increased pollock annual catch limits. In the context of the NE multispecies fishery as a whole, and in light of the overall recent effort reductions in the fishery and the constrains in fishing effort in effect, the net effect of the increase in the pollock annual catch limits will be slightly negative or neutral for protected species.

5.1.3 Habitat Impacts

5.1.3.1 No Action

Under this alternative, there would be no change to the Status Determination Criteria or the FY 2010 catch levels. Because the Status Determination Criteria is an abstract specification, it would have no impact on essential fish habitat. The No Action catch limits are consistent with the fishing mortality targets of Amendment 16, and the catch limits specified by FW 44. Because the annual catch limits would not change under the No Action Alternative, the No Action would not impact fishing opportunities or effort, and would not impact the interactions of groundfish gear with EFH.

5.1.3.2 Proposed Action (Preferred Alternative)

Under this alternative, the Status Determination Criteria and the FY 2010 catch levels would be revised. Because the Status Determination Criteria is an abstract specification, it would have no impact on essential fish habitat. The increase the pollock catch levels allowed would be substantial, and could result in limited additional fishing effort as compared to the No Action Alternative, as described in Section 5.1.3.1. In general, the impacts of the Proposed Alternative on EFH will track the trend in fishing effort. An effect of an increase in fishing effort compared to the No Action Alternative would be to increase slightly the interactions of groundfish gear with EFH. The scope of this increase with respect to the overall fishery is expected to be negligible.

It is difficult to predict the amount of fishing effort that will occur in FY 2010 due to the novelty and complexity of many aspects of the FMP. Although the amount of fishing effort associated with the Proposed Alternative will likely be greater than that associated with the No Action Alternative, the overall fishing effort in the groundfish fishery and effort targeting pollock will still likely be reduced compared with previous fishing years, due to the DAS restrictions and catch limits for all stocks implemented for FY 2010. It is highly unlikely that the amount of fishing effort overall, or the amount of fishing behavior targeting pollock will be greater than the fishing effort in the fishery during recent years, due to the regulatory constrains. The opportunity to vessels to take advantage of and catch additional pollock, if they choose to target pollock may depend on whether a vessel is fishing in a sector or in the common pool.

With respect to the common pool, if a stock with a low ACL such as Gulf of Maine Winter Flounder triggers the Regional Administrator to implement restrictive inseason trip limits or modifications to the DAS counting rules for the common pool, the increase in fishing effort allowed by the larger pollock catch limit could be offset by these additional restrictions. For vessels fishing in sectors, if a sector vessel is required by its sector's rules to only catch the Potential Sector Contribution (PSC) associated with its permit, the increased ACL for pollock may or may not provide such a vessel for fishing opportunity, depending upon the size of that PSC. The sector as a whole, may be afforded additional opportunity as a result of the increased pollock annual catch limits. In the context of the NE multispecies fishery as a whole, and in light of the overall recent effort reductions in the fishery and the constrains in fishing effort in effect, the net effect of the increase in the pollock annual catch limits will be slightly negative or neutral.

5.2 Economic Impact

Setting an ACL constrains the upper limit of the revenue possibilities that may be derived from any one stock in the groundfish fishery. The realized revenue potential for the groundfish complex as a whole depends on the technical interactions among species that may constrain the ability to obtain the full value from one or more stocks due to conservation requirements of another. The proposed action would revise the commercial pollock ACL for FY 2010 in from 2,748 mt to 16,553 mt. Potential revenues were calculated assuming 2007-2008 average live weight price of about $0.50 per pound. Whereas the historical pollock prices reported in Table 35 above were based on landed weight, the ACLs are expressed in live weight so, for purposes of the economic analysis, landed weights were converted to live weight equivalents. A price of $0.50 per pound was selected even though the live weight price was $0.68 per pound during FY2009 because the FY 2009 price was associated with landings levels that were nearly 5 million pounds lower than FY 2007 or 2008 values. Given both the initial and final revised specifications, substantially higher landings may be expected making it more likely that lower prices would prevail as compared to FY2009 prices. The economic impact of the revised 2010 pollock ACL may be substantially greater than the value of pollock alone since an ACL of 2,748 mt may be expected to constrain many sectors from utilizing Annual Catch Entitlement for other stocks, and may be anticipated to result in either an in-season adjustment to the common pool measures or trigger the common pool AM. The following provides an analysis of the potential economic impacts of the no action alternative and the preferred alternative. The values for the Sector ACEs in the economic impacts analysis below are expressed in pounds, whereas the values specified under the description of alternatives in Section 3.0 are expressed in metric tons.

5.2.1 No Action

Taking No Action Alternative would leave the ABC and ACL specifications for pollock unchanged from those implemented through Framework 44, and revised the a final rule to adjust the ACL specifications due to changes in the sector roster. In FW 44, the upper bound of economic impact (revenues) for the combined ACLs for all stocks was estimated to be $189 million. This estimate was noted as being unlikely to be obtained due a number of factors. Nearly half of the potential revenue was Georges Bank haddock; neither of the two original sectors ever harvested their full allocation of GB cod; the combined common pool and sector vessels have never harvested the available GB haddock or redfish; and catches of many other stocks have been less than the target TACs in recent years. Alternative estimates of aggregate potential commercial revenues ranged from $63 million to $87 million depending on whether sectors are successful in reducing discard rates of limiting stocks. The realized impacts of taking No Action are uncertain but may be expected to differ among sectors depending on PSC for pollock compared to more recent landings patterns. In fact, the ACE of pollock for all but four sectors would be less than FY 2008 landings and in many cases significantly so. For the common pool, the difference between the No Action catch limit and FY 2008 landings was over 700 thousand pounds and for sectors the deficit of pollock ACE and landings ranged between 8,600 and 4.3 million pounds (Table 36).

Table 36. Difference Between No Action 2010 Pollock ACE and FY 2008 Landings for Common Pool and by Sector (lb)

Common Pool/ Sector Name	No Action Pollock ACE	FY2008 Pollock Landings	No Action ACE Difference
Common Pool	137,189	844,096	-706,907
Fixed Gear Sector	472,003	743,488	-271,485
NCCS	26,868	0	26,868
NEFS 10	87,298	129,842	-42,544
NEFS 11	561,097	3,820,834	-3,259,737
NEFS 12	3,182	11,818	-8,636
NEFS 13	133,392	222,586	-89,194
NEFS 2	744,564	5,109,707	-4,365,143
NEFS 3	445,858	1,943,250	-1,497,392
NEFS 4	341,865	0	341,865
NEFS 5	24,724	2,547	22,177
NEFS 6	193,739	741,695	-547,956
NEFS 7	45,455	100,421	-54,966

NEFS 8	38,798	117,796	-78,998
NEFS 9	231,228	358,973	-127,745
Port Clyde Community Groundfish Sector	258,577	1,394,332	-1,135,755
Sustainable Harvest Sector	2,309,016	5,124,503	-2,815,487
Tri-State Sector	3,450	518	2,932
Total (including common pool)	**6,058,303**	**20,666,406**	**-14,608,103**

5.2.2 Proposed Action (Preferred Alternative)

The preferred alternative would increase the pollock ABC to 19,800 mt and would set the revised ACL to 16,553 mt. Based on the same assumptions used to calculate aggregate potential revenue for the FW 44 specifications, assuming the full initial ACL could be taken (i.e. assuming perfect selectivity), and using the pollock ABC value of 19,800 mt as the analytical basis, the potential revenue from all groundfish under the preferred alternative would be $204 million compared to $189.1 million under the No Action alternative (Table 37). Depending on potential changes in discard rates and fishing practices to more fully utilize available sector ACE, potential revenues may range from $77.9 million to $102.1 million, compared with $63 million and $87.2 million under the No Action Alternative. These calculations are based on the assumption that the available pollock ACL will be fully utilized by the combined common pool and sector participants. Whether full utilization of the pollock ACL will be realized or not is uncertain. In recent years pollock landings have been well below the levels that would be allowed under the preferred alternative (during FY 2008 US domestic pollock landings in live weight were 9,733 mt). Nevertheless, the primary benefit of the revised ACL is expected to be associated with reducing the likelihood that an accountability measure would be triggered for the common pool, and for sectors, relaxation of a potential barrier to obtaining higher utilization of economic yield from other stocks.

Table 37. Potential Commercial Groundfish Revenue ($1,000,000) for Different Assumed ACL Underage and Discards

Fishing Year 2010	100% of ACL is Landed	2007-2008 Average TTAC Underage	2007-2008 Average TTAC Underage and 2007-2008 Discards	TTAC Underage Reduced by 50%
No Action[a]	189.1	68.4	63.0	87.2
Preferred Alternative Revised ACL	204.0	83.3	77.9	102.1

[a] Replicated from Table 88 of Framework 44 Environmental Assessment

The preferred alternative revised ACL would allocate 36.5 million pounds of pollock to the fishery. This allocation would represent an increase of 30.4 million pounds and would exceed FY 2008 pollock landings by 15.8 million pounds and would exceed FY2009 landings by 22.3 million pounds. Due to the increased amount of pollock catch allowed, the preferred alternative would represent an increase of potential revenue from pollock of approximately $15 million, assuming recent average prices for pollock, and assuming that all available pollock would be harvested.

Due to the qualification criteria used to establish initial Potential Sector Contributions (history from 1996 to 2006), the revised allocations of sector pollock ACE may not reflect current or desired fishing practices. For example, even with a total increase in the revised sector specifications of 13,492 mt of pollock (16,178 mt – 375 mt; nearly 30 million pounds), two sectors would still be left with less pollock ACE than the collective sector membership landed during FY 2008 (NEFS 2 and NEFS 11). That is, even though the aggregate pollock ACE would exceed FY 2008 landings, the ACE for some sectors would still be lower than the sector members' 2008 combined pollock landings (Table 38). It should be noted that the deficit for the NEFS 2 sector may be readily overcome since the operations plan for NEFS 4, which would receive an ACE of over two million pounds, notes that it will be a lease-only sector to provide additional ACE to NEFS sectors 2 and 3. Theoretically, it is possible that the aggregate pollock ACE will be sufficient to obtain sufficient pollock to cover the needs of a sector through inter-sector trading of ACE although doing so would increase costs.

The sector operations plans indicate that the sector's ACE would be subdivided among each member according to the PSC brought into the sector by each member. This means that even though the ACE allocated to a sector may exceed the combined sector's pollock landings this may not be the case for every specific member of the sector. Note that sector membership is defined in each operations plan as being an individual that may own more than one permitted vessel. However, since information on accumulation of vessels is incomplete, the following evaluates the impact of the preferred alternative pollock ACL by permitted vessel exclusive of permits that are in the CPH program.

Exclusive of CPH permits, there were a total of 921 permits that were allocated a non-zero pollock PSC (Table 39). Of these permits, 339 reported landing pollock during FY 2008. Comparing the No Action pollock PSC by permit to FY 2008 landings results in a total of 248 permits where available pollock would be less than FY 2008 landings. Under the preferred alternative the number of permits where the pollock PSC would be less than FY 2008 landings would be reduced to 128. Thus, even with the revised pollock catch limits, a number of permits may need to obtain additional pollock either through an intra-company, intra-sector, or inter-sector transfer of pollock ACE (16% of permits that joined a sector and had a non-zero pollock PSC, would have less pollock than they landed during FY 2008).

As explained above, for a sector or a vessel, the differences between historical catch and available catch may be offset by the ability to obtain additional pollock quota either through an in intra-company, intra-sector, or inter-sector transfer. Given these available transfer options, the proposed action ACL would be sufficient to enable sectors and sector members to obtain at least as much pollock needed to sustain recent landings.

Table 38. Difference Between Preferred Alternative 2010 Pollock Sub-ACL/ACE and FY 2008 Pollock Landings for Common Pool and by Sector

	Preferred Alternative Pollock sub-ACL (common pool) or Sector ACE (mt)	Preferred Alternative Pollock sub-ACL (common pool) or Sector ACE (lb)	FY 2008 Landed Pollock (lb, live weight)	Difference between Preferred Alternative and FY 2008 landed pollock (lb)
Common	375	813,272	844,096	**-17,363**
Fixed Gear Sector	1,290	2,800,038	743,488	2,100,475
NCCS	73	159,355	0	160,937
NEFS 10	239	517,923	129,842	397,063
NEFS 11	1,533	3,328,562	3,820,834	**-441,148**
NEFS 12	9	18,832	11,818	8,024
NEFS 13	364	791,313	222,586	579,897
NEFS 2	2,034	4,416,915	5,109,707	**-625,505**
NEFS 3	1,218	2,644,995	1,943,250	741,980
NEFS 4	934	2,028,024	0	2,059,118
NEFS 5	68	146,669	2,547	147,367
NEFS 6	529	1,149,234	741,695	424,550
NEFS 7	124	269,689	100,421	172,952
NEFS 8	106	230,156	117,796	115,894
NEFS 9	632	1,371,771	358,973	1,034,348
Port Clyde Community Groundfish Sector	707	1,533,857	1,394,332	164,336
Sustainable Harvest Sector	6,309	13,697,903	5,124,503	8,784,461
Tri-State Sector	9	20,450	518	19,324
Totals	16,553	36,493,118	20,666,406	15,826,712

NCCS: Northeast Coastal Communities Sector; NEFS: Northeast Fishery Sectors

Table 39. Comparison of Number of Permits for Different 2008 Scenarios for Common Pool and Sectors

Common Pool/Sectors	Number of Permits With Pollock PSC	Number of Permits with FY 2008 Pollock Landings	Number of Permits Where No Action PSC < FY08 Landings	Number of Permits Where Preferred Alternative PSC < FY08 Landings
Common Pool	227	33	21	15
Fixed Gear Sector	83	24	13	4

NCCS	7	0	0	0
NEFS 10	36	16	7	2
NEFS 11	46	31	28	20
NEFS 12	7	4	4	2
NEFS 13	30	20	11	4
NEFS 2	73	41	34	18
NEFS 3	68	38	29	15
NEFS 4	43	0	0	0
NEFS 5	27	15	2	1
NEFS 6	15	7	7	4
NEFS 7	26	12	8	5
NEFS 8	22	13	9	5
NEFS 9	45	17	15	9
Port Clyde Community Groundfish Sector	41	23	22	15
Sustainable Harvest Sector	110	41	37	8
Tri-State Sector	15	4	1	1
Totals (including common pool)	921	339	248	128

NCCS: Northeast Coastal Communities Sector; NEFS: Northeast Fishery Sectors

5.3 Social Impacts

5.3.1 No Action

There is likely to be little difference between the social impacts of the No Action and the Preferred Alternative. Under both circumstances, catches are limited, they may be viewed as conservative limits, and the complexity of the catch limits and regulations in general may deter participation in the management process. The relatively minor differences in catch levels in the context of all the ACLs, is not likely to alter the perception of the management program. The social impacts of the Proposed Alternative are explained more below.

5.3.2 Proposed Alternative

The following discussion is based upon the FW 44 social impacts analysis. Implementation of ACLs as required by the Magnuson-Stevens Act may have social impacts that are difficult to define. The most likely type of impact is a change in the formation of attitudes toward the management process. The standardization of a process to determine fishing levels may lend a sense of legitimacy to fisheries management in the eyes of the public. However, the process for setting ACLs is quite complicated and technical, and some would-be public participants could be deterred from engaging in management forums.

Reductions in fishing effort are not likely to result from the revision of the pollock catch limits, however, if the additional pollock does not result in increases in overall effort due to the constraints of low ACLs for other stocks, industry frustration may be increased. Disruptions in revenue and daily living and regulatory discards (for the common pool) are other potential social impacts that will result, if catch of the ACL results in inseason modifications to management measures. Additional social impacts would occur if the ACL was exceeded during FY 2010, and accountability measures are triggered for FY 2011. The adoption of the ACLs may lead to concerns that the fishery is being managed in an overly conservative manner. This concern may increase as stocks rebuild. Fishermen may view fishing at less than 75% of FMSY on a rebuilt stock as limiting their ability to benefit from rebuilding. This could affect attitudes towards the management program since it will be viewed as limiting occupational opportunities unnecessarily.

Because the ACLs are simply caps on the amount of catch that can occur for each stock in the fishery, the adoption of ACLs numbers itself does not have major social impacts. Rather, low ACLs drive conservative management strategies, and the methods for reducing effort or allocating the ACL are the largest contributors to impacts of a social nature. The sector and effort control systems for FY 2010 – 2012 were adopted in Amendment 16 and impacts of each measure were described in that document.

There is likely to be little difference between the social impacts of the Proposed Action and No Action. Under both circumstances, catches are limited, they may be viewed as conservative limits, and the complexity may deter participation in the management process. The relatively minor differences in catch levels are not likely to alter the perception of the management program.

6.0 Cumulative Impacts

Introduction

A cumulative effects assessment (CEA) is a required part of an EIS or EA according to the Council on Environmental Quality (CEQ) (40 CFR part 1508.7) and NOAA's agency policy and procedures for NEPA, found in NOAA Administrative Order 216-6. The purpose of the CEA is to integrate into the impact analyses, the combined effects of many actions over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective but rather, the intent is to focus on those effects that are truly meaningful. This section serves to examine the potential direct and indirect effects of the alternatives in this emergency EA together with past, present, and reasonably foreseeable future actions that affect the groundfish environment. It should also be noted that the predictions of potential synergistic effects from multiple actions, past, present and/or future will generally be qualitative in nature.

Valued Ecosystem Components (VEC)

As noted in section 4.0 (Affected Environment), the VECs that exist within the groundfish fishery are identified and include the following:

1. Regulated groundfish stocks (target and non-target);
2. Other stocks (incidental catch and bycatch);

3. Endangered and other protected species;
4. Habitat, including non-fishing effects; and
5. Human Communities (includes economic and social effects on the fishery and fishing communities).

Temporal Scope of the VECs

While the effects of historical fisheries are considered, the temporal scope of past and present actions for regulated groundfish stocks, other stocks, habitat/EFH and the human environment is primarily focused on actions that have taken place since implementation of the initial NE Multispecies FMP in 1977. An assessment using this timeframe demonstrates the changes to resources and the human environment that have resulted through management under the Council process and through U.S. prosecution of the fishery, rather than foreign fleets. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, this analysis examines the period of one full year from the implementation of this action. This date was chosen because an emergency action can only be in effect for one year. Afterward, the Council must take permanent action and it is difficult to predict the outcome.

Geographic Scope of the VECs

The geographic scope of the analysis of impacts to regulated groundfish stocks, other stocks and habitat for this action is the total range of these VECs in the Western Atlantic Ocean, as described in the Affected Environment section (section 4.0) of this document and more fully in Framework 44 (NEFMC FW 44). However, the analyses of impacts presented in this EA focuses primarily on actions related to the harvest of pollock and other managed groundfish resources. The result is a more limited geographic area used to define the core geographic scope within which the majority of harvest effort for the managed resources occurs. For endangered and protected species, the geographic range is the total range of each species.

Because the potential exists for far-reaching sociological or economic impacts on U.S. citizens who may not be directly involved in fishing for the managed resources, the overall geographic scope for human communities is defined as all U.S. human communities. Limitations on the availability of information needed to measure sociological and economic impacts at such a broad level necessitate the delineation of core boundaries for the human communities. Therefore, the geographic range for the human environment is defined as those primary and secondary ports bordering the range of the groundfish fishery (section 4.0) from the U.S.-Canada border to, and including, North Carolina.

Analysis of Total Cumulative Effects

A cumulative effects assessment ideally makes effect determinations based on the culmination of the following: (1) impacts from past, present and reasonably foreseeable future actions; PLUS (2) the baseline condition for resources and human communities (note – the baseline condition consists of the present condition of the VECs plus the combined effects of past, present and reasonably foreseeable future actions); PLUS (3) impacts from the proposed action.

A summary of past, present and reasonably foreseeable future actions is presented immediately below, more thoroughly in Appendix IV of Framework 44. The baseline conditions of the resources and human community are subsequently summarized although it is important to note that beyond the stocks managed under this FMP and protected species, quantitative metrics for the baseline conditions are not available. Finally, a brief summary of the impacts from the alternatives contained in this amendment is included. The culmination of all these factors is considered when making the cumulative effects assessment.

Past, Present and Reasonably Foreseeable Future Actions

Table 40 summarizes the combined effects of other past, present and reasonably foreseeable future actions that affect the VECs, i.e., actions other than those alternatives under development in this document (a more thorough summary of the primary past, present and reasonably foreseeable future actions effecting this amendment can be found in Appendix IV of the Framework 44 EA).

Most of the actions affecting this EA and considered in Table 40 come from fishery-related activities (e.g., Federal fishery management actions). As expected, these activities have fairly straightforward effects on environmental conditions, and were, are, or will be taken, in large part, to improve those conditions. The reason for this is the statutory basis for Federal fisheries management - the re-authorized Magnuson-Stevens Act. That legislation was enacted to promote long-term positive impacts on the environment in the context of fisheries activities. More specifically, the act stipulates that management comply with a set of National Standards that collectively serve to optimize the conditions of the human environment. Under this regulatory regime, the cumulative impacts of past, present, and future Federal fishery management actions on the VECs should be expected to result in positive long-term outcomes. Nevertheless, these actions are often associated with offsetting impacts. For example, constraining fishing effort frequently results in negative short-term socio-economic impacts for fishery participants. However, these impacts are usually necessary to bring about long-term sustainability of a given resource and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the managed resource.

Non-fishing activities were also considered when determining the combined effects from past, present and reasonably foreseeable future actions. Activities that have meaningful effects on the VECs include the introduction of chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment. These activities pose a risk to the all of the identified VECs in the long term. Human induced non-fishing activities that affect the VECs under consideration in this document are those that tend to be concentrated in near shore areas. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities.

Table 40. - Summary effects of past, present and reasonably foreseeable future actions on the VECs (based on actions listed in Appendix IV of Framework 44).

VEC	Past Actions	Present Actions	Reasonably Foreseeable Future Actions	Combined Effects of Past, Present, Future Actions
Regulated Groundfish Stocks	**Mixed** Combined effects of past actions have decreased effort and improved habitat protection however, some stocks remain overfished	**Positive** Current regulations continue to manage for sustainable stocks	**Positive** Future actions are anticipated to continue rebuilding and strive to maintain sustainable stocks	**Short-term Negative** Several stocks are currently overfished, have overfishing occurring, or both **Positive** Stocks are being managed to attain rebuilt status
Other Species	**Positive** Combined effects of past actions have decreased effort and improved habitat protection	**Positive** Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species	**Positive** Future actions are anticipated to continue rebuilding and thus limit the take of discards/bycatch	**Positive** Continued management of directed stocks will also control incidental catch/bycatch
Endangered and Other Protected Species	**Positive** Combined effects of past fishery actions have reduced effort and thus interactions with protected resources	**Positive** Current regulations continue to control effort, thus reducing opportunities for interactions	**Mixed** Future regulations will likely control effort and thus protected species interactions, but as stocks improve, effort will likely increase, possibly increasing interactions	**Positive** Continued effort controls along with past regulations will likely help stabilize protected species interactions
Habitat	**Mixed** Combined effects of effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Effort reductions and better control of non-fishing activities have been positive but fishing activities and non-fishing activities continue to reduce habitat quality	**Mixed** Future regulations will likely control effort and thus habitat impacts but as stocks improve, effort will likely increase along with additional non-fishing activities	**Mixed** Continued fisheries management will likely control effort and thus fishery related habitat impacts but fishery and non-fishery related activities will continue to reduce habitat quality
Human Communities	**Mixed** Fishery resources have supported profitable industries and communities but increasing effort controls have curtailed fishing opportunities	**Mixed** Fishery resources continue to support communities but increasing effort controls combined with non-fishing impacts such as rising fuel costs have had a negative economic impact	**Short-term Negative** As effort controls are maintained or strengthened, economic impacts will be negative **Long-term Positive** As stocks improve, effort will likely increase which would have a positive impact	**Short-term Negative** Lower revenues would likely continue until stocks are fully rebuilt **Long-term Positive** Sustainable resources should support viable communities and economies

<u>Impact Definitions:</u>
-Regulated Groundfish Stocks, Non-groundfish species, Endangered and Other Protected Species: positive=actions that increase stock size and negative=actions that decrease stock size
-Habitat: positive=actions that improve or reduce disturbance of habitat and negative=actions that degrade or increase disturbance of habitat
-Human Communities: positive=actions that increase revenue and well being of fishermen and/or associated businesses negative=actions that decrease revenue and well being of fishermen and/or associated businesses

Baseline Conditions for Resources and Human Communities

For the purposes of a cumulative effects assessment, the baseline conditions for resources and human communities is considered the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions. Table 41 below illustrates the baseline conditions found as part of the Amendment 16 and Framework 44 cumulative effects analysis. These conditions remain timely and relevant. Please refer to the cumulative effects assessment in Framework 44 to review a complete summary of the baseline conditions for each VEC.

Table 41. Summary of Baseline Conditions for each VEC

Valued Ecosystem Component	Cumulative Effects Assessment Baseline Condition
Regulated Groundfish Stocks	**Negative** – short term overharvesting in the past contributed to several stocks being overfished or where overfishing is occurring; **Positive –** long term regulatory actions taken over time have reduced fishing effort and with the addition of Amendment 16, stocks are expected to rebuild in the future
Other Stocks	**Positive** – although prior groundfish management measures likely contributed to redirecting effort onto non-groundfish species, as groundfish rebuild this pressure should lessen and all of these species are also managed through their own FMP.
Endangered and other protected species	**Positive** – reduced gear encounters through effort reductions and additional management actions taken under the ESA and MMPA.
Habitat, including non-fishing effects	**Mixed** - reduced habitat disturbance by fishing gear but impacts from non-fishing actions, such as global warming, could increase and have a negative impact.
Human Communities	**Negative –** short term lower revenues would continue until stocks are sustainable **Positive** – long term sustainable resources should support viable communities and economies

Summary of Impacts from the Proposed Alternative

The preferred alternative analyzed as part of this cumulative effects assessment would revise the status determination criteria (administrative in nature) and allocate additional pollock resource to the fishery for harvest. The proposed level of catch would be consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). Both scientific and management uncertainty are accounted for in this catch level, so the risks of negative biological impacts have been minimized. A larger catch limit for pollock may result in greater fishing effort and greater catch of other stocks in addition to pollock because pollock would no longer serve as a constraining stock. An effect of an increase in fishing effort would be to increase slightly the interactions of groundfish gear with protected resources. However, the scope of this increase with respect to the overall fishery is expected to be negligible. Similarly, an increase in fishing effort would slightly increase the interactions of groundfish gear with EFH but with respect to the overall fishery these impacts are expected to be negligible. Finally, due to the greater allowance of pollock catch, a $15 million annual increase in revenue is expected, assuming recent average prices for pollock, and assuming that all available pollock would be harvested.

Summary of Cumulative Effects

The following analysis summarizes the cumulative effects on the VECs identified in this section through the consideration of past, present, and reasonably foreseeable future actions in combination with the baseline condition for resources and human communities and impacts from the proposed action.

Regulated Groundfish Stocks

As found in the cumulative effects analysis for Amendment 16 and Framework 44 to the FMP (NEFMC), the long-term trend in this fishery has been positive for cumulative impacts to target species. While several groundfish species remain overfished or overfishing is occurring, substantial effort reductions since implementation of the NE Multispecies FMP have allowed several stocks to rebuild and the rebuilding process for others is underway. In the case of the pollock resource, effort reductions have yielded positive impacts and the stock was just recently found to no longer be overfished, nor is overfishing occurring. While the proposed action would allow greater harvest of pollock, given the substantial effort reductions that should remain place for several years and the positive response of the pollock resource to past management efforts, the cumulative effect of this action is expected to maintain a healthy pollock stock and would result in no significant impacts. Pollock is caught along with other desirable groundfish species such as cod and haddock. The increased pollock catch should provide vessels greater opportunity to catch these species (i.e., because fishing must cease when the TAC for a species is reached, having a greater amount of pollock available would reduce the likelihood that the catch of other species would be constrained due to a lack of available pollock resource). However, all regulated species are constrained through catch limits implemented through past actions. Therefore, the combination of past actions with the proposed action would continue the sustainable harvest of other regulated species and would not be expected to result in any significant cumulative effects.

Other Stocks

The primary non-allocated target and bycatch species analyzed for the purposes of this EA are monkfish, dogfish, and skates. Management efforts in the past have led to each of these species being managed under their own FMP, and with the exception of smooth and thorny skates which are overfished; none of these species is overfished, nor is overfishing occurring. The proposed action was found to yield no negative impacts to all of these species. While it is possible that with additional pollock catch available, vessels may have the opportunity to fully fish their quota of other regulated groundfish species thus slightly increasing effort, there are regulations in place through the various FMPs for monkfish, dogfish, and skates that limit overall effort on these species. Further, future management actions geared toward maintaining sustainable harvests of these stocks are underway. Therefore, based on past, present and reasonably foreseeable future actions, no significant cumulative impacts to other stocks are expected.

Endangered and Other Protected Species

Historically, the implementation of FMPs has 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. Measures adopted by Amendment 16 will substantially reduce the overall commercial fishing effort and the amount of groundfish that can be caught, relative to historical amounts that have been harvested by the commercial multispecies fleet. The cumulative result of these actions to meet mortality objectives will be positive for protected resources. The effects from non-fishing actions are also expected to be low negative as the potential for localized harm to VECs exists.

Given the general trend toward slightly positive impacts to protected species, the potential for slightly negative or neutral impacts to protected species should have little or no cumulative impact. While it is possible that with additional pollock catch available, vessels may have the opportunity to fully fish their quota thus slightly increasing effort, the substantial effort reductions implemented through Amendment 16 should result in a net overall reduction in effort and thus fewer opportunities for interaction with protected species.

Habitat Including Non-fishing Effects

While the impact analysis in this action is focused on direct and indirect impacts to habitat and EFH, there are a number of non-fishing impacts that must be considered when assessing cumulative impacts. Many of these activities are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. Other non-fishing factors such as climate change and ocean acidification are also thought to play a role in the degradation of habitat. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat and EFH. However, the general trend in fisheries management toward effort reductions, particularly with the implementation of Amendment 16, has yielded positive impacts to habitat and EFH. Although impacts from the proposed action were found to be slightly negative or neutral, when considered in the larger context of cumulative impacts, even slightly negative impacts due to increased effort would represent a substantial effort reduction compared to years before the implementation of Amendments 13 and 16. Based on this rational, the cumulative impacts from the proposed action, when considered with past, present and reasonably foreseeable future actions would not be significant.

Human Communities

Past management actions have had significant negative impacts on communities that depend on the groundfish fishery, particularly as a result of decreases in revenue. Although special programs implemented through Amendment 13 and subsequent framework actions have provided the industry additional opportunities to target healthier groundfish stocks, substantial increases in landings and revenue will likely not take place until further stock rebuilding occurs under the Amendment 16 rebuilding plan. The proposed action would result in up to a $15 million increase in revenue. While helpful, this increase would not offset the substantial revenue reductions of the past, particularly as a result of Amendments 13 and 16. Therefore, the cumulative impact of this action in conjunction with other past, present and reasonably future actions would likely do little to offset the trend of significant negative impacts on communities until future stock rebuilding occurs.

7.0 Applicable Law

7.1 Magnuson-Stevens Fishery Conservation and Management Act

7.1.1 Consistency with National Standards

Section 301 of the Magnuson-Stevens Act requires that regulations implementing any fishery management plan or amendment be consistent with the ten national standards listed below.

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The revision to the Status Determination Criteria and annual catch limits will have a positive biological impact by aligning current management measures with the best available scientific information. The level of catch is consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). The increased level of pollock catch allowed brings the catch level of both the pollock stock and the fishery overall closer toward optimal yield. Both scientific and management uncertainty are accounted for in this catch level, so the risks of negative biological impacts have been minimized.

Conservation and management measures shall be based on the best scientific information available.

The principle reason for the revision to the Status Determination Criteria and annual catch limits is to align current management measures with the best available scientific information. The new peer-reviewed pollock stock assessment (SAW 50) represents an improvement over the previous stock assessment, which had greater uncertainty associated with it. The economic analyses in this document are based primarily on landings, revenue, and effort information collected through the NMFS data collection systems used for this fishery.

To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

This action manages each individual groundfish stock as a unit throughout its range. The catch limits specifically designed for the pollock stock are applied to the entire range of the stock. In addition, the groundfish complex as a whole is managed in close coordination. Management measures are designed and evaluated for their impact on the fishery as a whole.

Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The management measures do not discriminate between residents of different states. They are applied equally to all permit holders, regardless of homeport or location. While the measures do not discriminate between permit holders, they do have different impacts on different participants. This is because of the differences in the distribution of fish and the varying stock levels in the complex. For example, the catch limits for pollock may have more impacts on offshore fishermen who target that stock, or sector vessels with low PSC for pollock currently. These distributive impacts are difficult to avoid given the requirement to rebuild overfished stocks. Even if the measures are designed to treat all permit holders the same, the fact that fish stocks are not distributed evenly, and that individual vessels may target specific stocks, means that distributive impacts cannot be avoided.

Conservation and management measures shall, where practicable consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The catch limits specified by this action do not have economic allocation as their sole purpose – all are designed to contribute to the control of fishing mortality by allowing the fishery to catch the amount of fish that is appropriate given the status of the stock, and the requirements of the FMP and MSA.

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The primary effort controls used in this management plan – DAS and sectors - allow each vessel operator some flexibility to fish when and how it best suits his or her business. Vessels can make short or long trips, and can fish in any open area at any time of the year (although opportunity will likely decline as the fishing year progresses). The measures allow for the use of different gear, vessel size, and fishing practices. The specific measures adopted in this action add to such flexibility.

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
The catch limits implemented by this action will provide additional fishing opportunity and revenue for vessels that land pollock. While some of the measures used in the management plan tend to increase costs, those measures are necessary for achieving the plan's objectives. These measures accomplish other goals, however, by keeping catch within mortality targets and allowing rebuilding programs to continue. The measures do not duplicate other regulatory efforts. Management of multispecies in federal waters is not subject to coordinated regulation by any other management body. Absent this action, a Council action to increase the pollock catch limits would be necessary, and result in lost fishing opportunity and unnecessary waste.

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse impacts on such communities.
Consistent with the requirements of the Magnuson-Stevens Act to prevent overfishing and rebuild overfished stocks, this action restricts fishing activity through the imposition of restrictions on allowable catches. Analyses of the impacts of this action show that overall landings and revenues are likely to increase. At the individual level, landings and revenue will depend upon the vessel's fishing behavior and fishing history (if fishing in a sector).

Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
The revised pollock annual catch limits are expected to have little impact on the rate of bycatch, but could increase the net amount of bycatch slightly, if the increased catch limit enables vessels to increase their fishing effort.

Conservation and management measures shall, to the extent practicable, promote safety of human life at sea.
The revised pollock annual catch limits are expected to have no impact on the safety of the fishing operations of vessels fishing under the requirements of the FMP.

7.1.2 Other Magnuson-Stevens Act Requirements

Section 303(a) of the Magnuson-Stevens Act contains 14 required provisions for FMPs. These are discussed below. It should be emphasized that the requirement is imposed on the FMP. In some cases noted below, the Magnuson-Stevens Act requirements are met by information in the Northeast Multispecies FMP, as amended. Any fishery management plan that is prepared by any Council, or by the Secretary, with respect to any fishery, shall—

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law;

Foreign fishing is not allowed under this management plan or this action and so specific measures are not included that specify and control allowable foreign catch. The measures in this management plan are designed to prevent overfishing and rebuild overfished stocks. There are no international agreements that are germane to multispecies management (the U.S./Canada Resource Sharing Understanding, implemented through Amendment 13, is not considered an international agreement).

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any;

Amendment 16 included a thorough description of the multispecies fishery from 2001 through 2008, including the gears used, number of vessels, landings and revenues, and effort used in the fishery. This action provides a summary of that information and additional relevant information about the pollock fishery in Section 4.5.

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification;

The present biological status of the fishery is described in Section 4.2. Likely future conditions of the resource are described in Section 6.0. Impacts resulting from other measures in the management plan other than the specifications included here can be found in Amendment 16 and FW 44. The maximum sustainable yield for each stock in the fishery is defined in Amendment 16 and optimum yield for the fishery is defined in Amendment 9.

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis,

will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States;

U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from this fishery as specified in Amendment 16 and Framework 44. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing.

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;

Current reporting requirements for this fishery have been in effect since 1994 and were originally specified in Amendment 5. They were slightly modified in Amendments 13 and 16, and VMS requirement were adopted in FW 42. The requirements include Vessel Trip Reports (VTRs) that are submitted by each fishing vessel. Dealers are also required to submit reports on the purchases of regulated groundfish from permitted vessels. Current reporting requirements are detailed in 50 CFR 648.7. Recent requirements were implemented in order to support the need for more timely monitoring to support the implementation the annual catch limit requirements of the Magnuson-Stevens Act.

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery;

Provisions in accordance with this requirement were implemented in earlier actions, and continue with this action. For common pool vessels, the carry-over of a small number of DAS is allowed from one fishing year to the next. If a fisherman is unable to use all of his DAS because of weather or other conditions, this measure allows his available fishing time to be used in the subsequent fishing year. Sectors will also be allowed to carry forward a small amount of ACE into the next fishing year. This will help sectors react should adverse weather interfere with harvesting the entire ACE before the end of the year. Neither of these practices requires consultation with the Coast Guard.

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat;

Essential fish habitat was defined for Atlantic wolffish in Amendment 16, and for all stocks in an earlier action. A summary of the EFH can be found in Section 4.1.3.

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan;

The 2010 peer-reviewed pollock stock assessment (SAW 50), upon which this action is based, represents the best available science. The Northeast Fisheries Science Center has made the provisional determination that the Pollock, *Pollachius virens,* resource is not overfished and that overfishing is not occurring. The draft stock assessment also suggests that the pollock stock should be considered rebuilt. The basis for this provisional determination is the draft working papers prepared by an assessment team led by the NEFSC and supported by external partners, which were prepared and reviewed at the June 1-5, 2010 meeting of the Stock Assessment Review Committee in Woods Hole, MA. This review was conducted by the Committee's four independent external reviewers and an independently-selected external Chair. The final report of the Committee has not yet been completed but the draft conclusions, distributed on June 3, 2010, support the conclusions given above, and constitute the best available science at the time this EA was written. Final action to implement the proposed catch limits will not be taken until the stock assessment report is final, and will be contingent upon the conclusions of the report. NMFS expects the final report and findings of this panel to be available by mid-July. For all the stocks in the FMP, NMFS and the Council will respond to new information as swiftly as possible, within the constraints of the regulatory process.

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants;

Impacts of this framework on fishing communities directly affected by this action and adjacent areas can be found in Sections 5.2 and 5.3

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery;

Objective and measurable Status Determination Criteria for all species in the management plan, with the exception of pollock, are presented in Amendment 16. A full explanation of how the criteria were determined can be found in the GARM III (NEFSC 2008) and Data Poor Working Group documents (DPWG 2009). For pollock, this action implements new Status Determination Criteria based upon the revised information in SAW 50. The Council will need to take subsequent action to revise the pollock Status Determination Criteria on a permanent basis.

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided;

A Standardized Bycatch Reporting Methodology omnibus amendment was adopted by the Council in June 2007. That methodology applies to this action. Although there is a pollock trip limit of 1,000 lb/DAS up to 10,000 lb per trip currently in place, the increased annual catch limit for pollock implemented by this action, increases the likelihood that the Regional Administrator will not implement further restrictions in the pollock trip limit (which would have the potential to increase pollock discards).

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish;

This management plan does not include a catch and release recreational fishery management program and thus does not address this requirement.

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors;

As noted above, the description of the commercial, recreational, and charter fishing sectors was fully developed in Amendment 16, and augmented by FW 44. This document provides additional pertinent information on the commercial landings of pollock (Section 4.5).

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery.

The method of restrictions and allocations to the fishery were adopted in Amendment 16. This action does not allocate harvest restrictions or stock benefits to the fishery in a novel way, but specifies catch limits for pollock consistent with the existing allocation structure.

(15) *Establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.*

Revised ACL specifications for pollock are implemented through this action. The ACL process was described in Amendment 16 and FW 44. The pollock specifications of this emergency action were developed in a way to ensure that overfishing does not occur, in accordance with Amendment 16 and all relevant laws.

7.1.3 Essential Fish Habitat Assessment

This essential fish habitat (EFH) assessment is provided pursuant to 50 CFR 600.920(e) of the EFH Final Rule to initiate EFH consultation with the National Marine Fisheries Service.

Description of Action

The purpose of this emergency action is to revise the pertinent stock status determination criteria and FY 2010 catch limits for pollock to reflect the most recent scientific information regarding the status of pollock, and the requirements of the FMP. In general, the activity within the scope of this Action, fishing for groundfish species, occurs off the New England and Mid-Atlantic coasts within the U.S. EEZ. Thus, the range of this activity occurs across the designated EFH of all Council-managed species (see Amendment 11 to the Northeast Multispecies FMP for a list of species for which EFH was designated, the maps of the distribution of EFH, and descriptions of the characteristics that comprise the EFH). EFH designated for species managed under the Secretarial Highly Migratory Species FMPs are not affected by this action, nor is any EFH designated for species managed by the South Atlantic Council as all of the relevant species are pelagic and not directly affected by benthic habitat impacts.

The Proposed Alternative is described in Section 3.2, and consists of increasing the FY 2010 pollock catch specifications for the fishery. The modification to the stock status determination criteria (Section 3.1) is not expected to affect EFH because it is administrative in nature.

Assessing the Potential Adverse Impacts

The potential adverse impacts to habitat are described in Section 5.1.3.2.

Minimizing or Mitigating Adverse Impacts

Section 5.1.3.2 (habitat impacts of Proposed Action) demonstrates that the overall habitat impacts of the proposed measures have neutral impacts relative to the baseline habitat protections established under Amendment 13 to the Northeast Multispecies FMP. As such, additional measures to mitigate or minimize adverse effects of the multispecies fishery on EFH beyond those established under Amendment 13 are not necessary.

Conclusions

Because there are no adverse impacts associated with this action relative to the Amendment 13 baseline, no EFH consultation is required.

7.2 Environmental Policy Act (NEPA)

NEPA provides a mechanism for identifying and evaluating the full spectrum of environmental issues associated with federal actions, and for considering a reasonable range of alternatives to avoid or minimize adverse environmental impacts. This document is designed to meet the requirements of both the Magnuson-Stevens Act and NEPA. The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents (40 CFR 1500 – 1508), as has NOAA in its agency policy and procedures for NEPA in NAO 216-6 §5.04b.1. All of those requirements are addressed in this document, as referenced below.

7.2.1 Environmental Assessment

The required elements of an Environmental Assessment (EA) are specified in 40 CFR 1508.9(b) and NAO 216-6 §5.04b.1. They are included in this document as follows:

- The need for this action is described in section 2.2;
- The alternatives that were considered are described in section 3.0 (No Action and Proposed Action);
- The environmental impacts of the Proposed Action are described in section 5.0;
- The agencies and persons consulted on this action are listed in section 8.0.

While not required for the preparation of an EA, this document includes the following additional sections that are based on requirements for an Environmental Impact Statement (EIS).

- An Executive Summary can be found in section 1.0.
- A table of contents can be found on page 5.
- Background and purpose are described in section 2.0.
- A brief description of the affected environment is in section 4.0.
- Cumulative impacts of the Proposed Action are described in Section 6.0.

- A determination of significance is in section 7.2.2
- A list of preparers is in section 8.0.

7.2.2 Finding of No Significant Impact (FONSI)

National Oceanic and Atmospheric Administration Order (NAO) 216-6 (revised May 20, 1999) proposed criteria for determining the significance of the impacts of a proposed fishery management action. In addition, the Council on Environmental Quality 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: This action cannot be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action. Analysis of the measures in section 5.0 indicates that the revision to the pollock Status Determination Criteria and annual catch limits will align current management measures with the best available scientific information. The level of catch is consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). Both scientific and management uncertainty are accounted for in this catch level, so the risks of negative biological impacts have been minimized.

(2) *Can the Proposed Action reasonably be expected to jeopardize the sustainability of any non-target species?*

Response: This action cannot be reasonable expected to jeopardize the sustainability of any non-target species that may be affected by the action. The proposed measures will revise the pollock ACLs and may increase fishing effort slightly. There are no indications that an increase in groundfish fishing activity will jeopardize the sustainability of non-target species.

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

Response: The Proposed Action cannot be reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in the FMP. As discussed in section 5.1.3.2, the proposed measure in the context of the FMP as a whole, is expected to have a slightly negative to neutral impact on habitat since it may allow a slight increase in fishing effort.

(4) *Can the Proposed Action be reasonably expected to have a substantial adverse impact on public health or safety?*

Response: Nothing in the Proposed Action can be reasonable expected to have a substantial adverse impact on public health or safety. Measures adopted in Amendment 16 were designed to improve safety in spite of low ACLs implemented by FW 44. The flexibility inherent in sector management and the ability to use common pool DAS at any time are key elements of the measures that promoted safety. To the extent this action will allow additional fishing opportunity and revenue, it does not raise concerns about causing a change in incentives that may negatively impact vessel safety.

(5) *Can the Proposed Action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?*

Response: The Proposed Action cannot be reasonably expected to adversely affect endangered or threatened species. As discussed in Section 5.1.2., the effect on these species in the context of the FMP is expected to be slightly negative or neutral. Formal consultation under Section 7 of the ESA is has been reinitiated and is ongoing for the NE Multispecies FMP. NMFS has determined that continued operation of the FMP during the consultation period, as authorized by NMFS, will neither jeopardize the continued existence of endangered and threatened species, nor destroy or adversely modify designated critical habitat.

(6) *Can the Proposed Action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?*

Response: The Proposed Action is not expected to have a substantial impact on biodiversity and/or ecosystem function with the affected area. The use of ACLs will tightly control catches of target and incidental regulated groundfish stocks. Catches of target and incidental catch species under this program will be consistent with the mortality targets of Amendment 16, and thus will not have a substantial impact on predator-prey relationships or biodiversity. This action will have no more than minimal adverse impacts to EFH and that the overall impact to EFH will be neutral. It is therefore reasonable to expect that there will not be substantial impact on biodiversity or ecosystem function.

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

Response: The environmental assessment documents that no significant natural or physical effects will result from the implementation of the Proposed Action. The Proposed Action is designed to implement revised specifications for pollock to continue the groundfish rebuilding programs that were implemented as a result of Amendments 13 and 16 to the Northeast Multispecies FMP. As described in section 5.1.1.2, the level of catch specified by this action is consistent with sustaining the biomass over the long-term at the level associated with maximum sustainable yield (Bmsy) and fishing at a sustainable level of mortality (Fmsy). The action cannot be reasonably expected to have a substantial impact on habitat or protected species, as the level of fishing effort targeting pollock and in the fishery at-large is expected to fall within the range of that analyzed in Amendment 16. The action's potential economic and social impacts are also addressed in the environmental assessment (see sections 5.2 and 5.3, respectively) and more specifically in the Executive Order 12866 review and the Regulatory Impact Review (Section 7.11).

NMFS has determined that there is no need to prepare an EIS. The purpose of NEPA is to protect the environment by requiring Federal agencies to consider the impacts of their Proposed Action on the human environment, defined as "the natural and physical environment and the relationship of the people with that environment." The EA for this action describes and analyzes the proposed measure and alternative and concludes there will be no significant impacts to the natural and physical environment. Some fishermen, shore-side businesses and others may experience positive impacts to their livelihood, these impacts in and of themselves do not require the preparation of an EIS, as supported by NEPA's implementing regulations at 40 C.F.R. 1508.14. Consequently, because the EA demonstrates that the action's potential natural and physical impacts are not significant, the execution of a FONSI remains appropriate under criteria 7.

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

<u>Response</u>: The effects of the proposed measures on the quality of human environment are not expected to be highly controversial. The need to rebuild groundfish stocks is well-documented. While there has been some debate over whether the ACLs for some stocks can be increased in order to avoid negative impacts on the fishery, this action alleviates that concern for one stock.

(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?*

<u>Response</u>: No, the Proposed Action cannot be reasonably expected to result in substantial impacts to unique areas or ecological critical areas. The only designated HAPC in the areas affected by this action is protected by an existing closed area that would not be affected by this action. In addition, vessel operations around the unique historical and cultural resources encompassed by the Stellwagen Bank National Marine Sanctuary would not likely be altered by this action. As a result, no substantial impacts are expected from this action.

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

Response: The Proposed Action is not expected to result in highly uncertain effects on the human environment or involve unique or unknown risks. The revised catch limits are based upon the best available scientific information, and take management and scientific uncertainty into account. While there is a degree of uncertainty over how much additional fishing opportunity and revenue will result from the increased catch limits, both the sectors and common pool components of the fishery will be subject to management measures that the Amendment 16 and FW 44 analyses indicate will be effective in controlling fishing effort. Overall, the impacts of the Proposed Action can be, and are, described with a relative amount of certainty.

(11) *Is the Proposed Action related to other actions with individually insignificant, but cumulatively significant impacts?*

Response: The Proposed Action is not related to other actions with individually insignificant but cumulatively significant impacts. Recent management actions in this fishery include Amendment 16 and FW 44. The scope of the catch limits specified by this action are relative minor in relation to the scope of impacts that were anticipated by Amendment 16 and FW 44, thus cannot be said to have different cumulative impacts that were not foreseen and addressed in the amendment. Therefore, the Proposed Action, when assessed in conjunction with the regulatory actions noted above, would not have significant impacts on the natural or physical environment.

(12) *Is the Proposed Action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?*

Response: The Proposed Action is not likely to affect objects listed in the National Register of Historic Places or cause significant impact to scientific, cultural, or historical resources. The only object in the fishery area that is listed in the National Register of Historic Places is the wreck of the steamship *Portland* within the Stellwagen Bank National Marine Sanctuary. The current regulations allow fishing within the Stellwagen Bank National Marine Sanctuary. The Proposed Action would not regulate current fishing practices within the sanctuary. However, vessels typically avoid fishing near the wreck to avoid tangling gear on the wreck. Therefore, this action would not result in any adverse affects to the wreck of the *Portland*.

(13) *Can the Proposed Action reasonably be expected to result in the introduction or spread of a non-indigenous species?*

Response: This action would not result in the introduction or spread of any non-indigenous species, as it would not result in any vessel activity outside of the Northeast region.

(14) *Is the Proposed Action likely to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?*

Response: No, the Proposed Action is not likely to establish precedent for future actions with significant effects. The Proposed Action adopts specifications designed to respond to recent scientific information, consistent with the methods for setting catch limits adopted by Amendment 16. As such, the action is designed to address a specific circumstance and is not intended to represent a decision about future management actions that may adopt different measures.

(15) *Can the Proposed Action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?*

Response: The Proposed Action is intended to implement measures that are consistent with the protection of marine resources and would not threaten a violation of Federal, state, or local law or requirements to protect the environment.

(16) *Can the Proposed Action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?*

Response: As specified in the responses to the first two criteria of this section, the proposed action is not expected to result in cumulative adverse effects that would have a substantial effect on target or non-target species. This action would be consistent with optimizing the long-term sustainable use of the pollock resource.

FONSI STATEMENT: In view of the information presented in this document and the analysis contained in this Environmental Assessment and the Environmental Assessment prepared for Framework Adjustment 44 to the Northeast Multispecies Fishery Management Plan, it is hereby determined that this emergency action to revise the pollock catch limits will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the Proposed Action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not required.

Pat Kurkul — July 7, 2010

Northeast Regional Administrator, NOAA — Date

7.3 Endangered Species Act

NMFS reinitiated formal consultation on the multispecies fishery on April 2, 2008 [Consultation No. FIJ~ER/2008/01755], in accordance with the regulations at 50 CFR 402.16, to reconsider the effects of the continued operation of the multispecies fishery on ESA-listed cetaceans and sea turtles. The consultation is ongoing. Section 7 of the Endangered Species Act requires federal agencies conducting, authorizing or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. NMFS, Northeast Region determined that the continued authorization of the Northeast Multispecies FMP during the consultation period, including revised catch limits for pollock, is not likely to jeopardize the continued existence of ESA-listed marine sea turtles and mammals.

7.4 Marine Mammal Protection Act

NMFS, Northeast Region has reviewed the impacts of this Action on marine mammals and has concluded that the management action is consistent with the provisions of the MMPA. Although the specification of large catch limits may increase fishing effort, and thus could affect species inhabiting the multispecies management unit, the measures will not alter the effectiveness of existing MMPA measures, such as take reduction plans, to protect those species based on overall reductions in fishing effort that have been implemented through the FMP.

For further information on the potential impacts of the fishery and the proposed management action on marine mammals, see section 5.1.2 of this document.

7.5 Coastal Zone Management Act

Section 307(c)(1) of the Federal CZMA of 1972 requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. Pursuant to Section 930.36(c) of the regulations implementing the Coastal Zone Management Act, NMFS made a general consistency determination that the Northeast Multispecies Fishery Management Plan (FMP), including Amendment 16, and Framework Adjustment 44, is consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. This general consistency determination applies to the current NE Multispecies Fishery Management Plan (FMP), and all subsequent routine Federal actions carried out in accordance with the FMP such as Framework Adjustments and specifications. A general consistency determination is warranted because Framework Adjustments to the FMP and catch specifications are repeated activities that adjust the use of management tools previously implemented in the FMP. A general consistency determination avoids the necessity of issuing separate consistency determinations for each incremental action. This determination was submitted to the above states on October 21, 2009. To date, the states of North Carolina, Rhode Island, Virginia, Connecticut, New Hampshire, and Pennsylvania have concurred with the General Consistency Determination.

7.6 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. For the rulemaking that will implement the revised pollock catch specifications, pursuant to 5 U.S.C. 553(b)(3)(B) and (d)(3), there is good cause to waive prior notice and opportunity for public comment; as well as the delayed effectiveness for this action, because prior notice and comment, and a delayed effectiveness, would be impracticable and contrary to the public interest. Delay in the implementation of this action could result in the cessation of fishing by sector vessels and/or implementation of inseason restrictions for vessels fishing in the common pool, if the current, unrevised low catch levels are reached. The revised scientific information upon which the revised pollock annual catch limits are based became available only recently. The time necessary to provide for prior notice, opportunity for public comment, and delayed effectiveness for this action may prevent some vessels from targeting pollock, or could severely curtail fishing operations if the current annual catch limit is reached prior to implementation of the revised, larger catch limit. A swift implementation of the revised catch limits will minimize the chances a negative economic impacts resulting from the current size of the pollock catch limit.

7.7 Data Quality Act

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

Utility of Information Product
The information presented in this document is helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the Proposed Action, the catch limits proposed, and the impacts of those catch limits. A discussion of the reasons for selecting the Proposed Action is included so that intended users may have a full understanding of the Proposed Action and its implications.

Until a final rule is prepared and published, this document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of this document and the decisions made by NMFS to implement this action are the result of the stock assessment process.

This document is available in several formats, including printed publication, CD-ROM, and online through NMFS Northeast Region's web page in PDF format. The Federal Register notice that announces the final rule will be made available in printed publication, on the website for the Northeast Regional Office, and through the Regulations.gov website. The Federal Register document will provide metric conversions for all measurements.

Integrity of Information Product
Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NOAA Fisheries Service adheres to the standards set out in Appendix III, "Security of Automated Information Resources," of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity of Information Product
For purposes of the Pre-Dissemination Review, this document is considered to be a "Natural Resource Plan." Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, Fishery Management Plan Process; the Essential Fish Habitat Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Stock status (including estimates of biomass and fishing mortality) reported in this product are based on a stock assessments subject to peer-review through the Stock Assessment Review Committee. Although this action was initiated prior to peer review in order to expedite implementation of increased catch limits (based on preliminary information), the action will not be implemented unless the warranted by the final report of the stock assessment (SAW 50). Landing and revenue information is based on information collected through the Vessel Trip Report and Commercial Dealer databases. Original analyses in this document were prepared using data from accepted sources, by NMFS staff.

The Northeast Fisheries Science Center made the provisional determination that the Pollock, *Pollachius virens*, resource is not overfished and that overfishing is not occurring. The draft stock assessment also suggests that the pollock stock should be considered rebuilt. The basis for this provisional determination is the draft working papers prepared by an assessment team led by the NEFSC and supported by external partners, which were prepared and reviewed at the June 1-5, 2010 meeting of the Stock Assessment Review Committee in Woods Hole, MA. This review was conducted by the Committee's four independent external reviewers and an independently-selected external Chair. The final report of the Committee has not yet been received but the draft conclusions, distributed on June 3, 2010, support the conclusions given above, and constitute the best available science at this time. NMFS expects the final report and findings of this panel to be available by mid-July. Publication of the emergency rule would not occur until after the release of the final stock assessment report, assuming it is consistent with the final report, which it is expected to be. If the final report is not consistent with this EA, the final rule will have to be revised to reflect the final report, and a supplement to this EA prepared.

The analyses conducted in support of this Action were conducted using information from the most recent complete fishing years, through 2008. Complete data were not available for fishing year 2009.

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 section 5.0 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries Service Headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. 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 a final rules prepared to implement the catch limits is conducted by staff at NOAA Fisheries Service Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

7.8 Executive Order 13132 (Federalism)

This E.O. established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The E.O. also lists a series of policy making criteria to which Federal agencies must adhere when formulating and implementing policies that have federalism implications. However, no federalism issues or implications have been identified relative to the catch limits specified by this action. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under E.O. 13132. The affected states have been closely involved in the development of the proposed management measures through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council). No comments were received from any state officials relative to any federalism implications that may be associated with this action.

7.9 Executive Order 13158 (Marine Protected Areas)

The Executive Order on Marine Protected Areas requires each federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA. The E.O. directs federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the Order. The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. As of the date of submission of this FMP, the list of MPA sites has not been developed by the departments. No further guidance related to this Executive Order is available at this time.

7.10 Paperwork Reduction Act

The purpose of the PRA is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. The authority to manage information and recordkeeping requirements is vested with the Director of the Office of Management and Budget (OMB). This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications.

This action makes no alterations to the existing collection of information requirements implemented by previous amendments to the FMP that are subject to the PRA, including:

- Reporting requirements for SAPs and the Category B (regular) DAS Program
- Mandatory use of a Vessel Monitoring System (VMS) by all vessels using a groundfish DAS
- Changes to possession limits, which will change the requirements to notify NMFS of plans to fish in certain areas
- Provisions to allow vessel operators to notify NMFS of plans to fish both inside and outside the Eastern U.S./CA area on the same fishing trip

7.11 Regulatory Impact Review

Determination of Economic Significance for E.O. 12866

E.O. 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant action is any regulatory action that may

- Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The proposed action would raise the commercial ACL for pollock from 2,748 mt to 16,553 mt. The potential economic impacts of this change are discussed in more detail in Section 5.2.2. The following provides a summary of findings. Due to the increased amount of pollock catch allowed, the proposed action would represent an increase of potential revenue of approximately $15 million, assuming recent average prices for pollock. This estimate is based on the assumption that all available pollock would be harvested. Recent landings have been under 10,000 mt, which suggests that potential revenues from the change in pollock ACL alone may be overestimated. However, the economic benefit of the proposed action may be greater than the value of pollock alone since pollock is a component of a mixed species fishery subject to a catch limit on each species in the complex. This means that catch limits imposed on one species may constrain the ability to obtain higher economic yield from others. Because of these interactions, the magnitude of the economic benefit of the change in pollock ACL to the groundfish fishery as a whole is uncertain. Due to the qualification criteria used to establish initial Potential Sector Contributions, allocations of sector ACE may not reflect current or desired fishing practices. For example, even with an increase of 13,554 mt (nearly 30.4 million pounds) two sectors would still be left with less pollock ACE than the collective sector membership landed during FY 2008. Similarly, 14 % of permits that joined a sector (and that have pollock PSC) would have less pollock than they landed during FY 2008. These differences may be offset by the ability to obtain additional pollock quota either through an in intra-company, intra-sector, or inter-sector transfer. Given these available transfer options, the proposed action ACL would be sufficient to enable sectors and sector members to obtain at least as much pollock needed to sustain recent landings.

The overall economic impact of the proposed action is uncertain. The primary economic benefit would be expected to enable higher levels of economic yield in the groundfish fishery as a whole. However since the specification change would be limited to pollock the economic impact is not expected to result in an annual effect on the economy as a whole that exceeds $100 million. Therefore the proposed action would not be a significant action for purposes of E.O. 12866.

Regulatory Flexibility Act (RFA)
The purpose of the RFA is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the RFA requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. Because this action does not involve a preparation of a proposed rule (see APA discussion), no RFA analysis has been conducted.

8.0 List of Preparers; Point of Contact

Questions concerning this document may be addressed to:

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10.0 Glossary

Adult stage: One of several marked phases or periods in the development and growth of many animals. In vertebrates, the life history stage where the animal is capable of reproducing, as opposed to the juvenile stage.

Adverse effect: Any impact that reduces quality and/or quantity of EFH. May include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include sites-specific of habitat wide impacts, including individual, cumulative, or synergistic consequences of actions.

Aggregation: A group of animals or plants occurring together in a particular location or region.

Anadromous species: Fish that spawn in fresh or estuarine waters and migrate to ocean waters

Amphipods: A small crustacean of the order Amphipoda, such as the beach flea, having a laterally compressed body with no carapace.

Anaerobic sediment: Sediment characterized by the absence of free oxygen.

Anemones: Any of numerous flowerlike marine coelenterates of the class Anthozoa, having a flexible cylindrical body and tentacles surrounding a central mouth.

Annual Catch Entitlement (ACE): Pounds of available catch that can be harvested by a particular sector. Based on the total PSC for the permits that join the sector.

Annual total mortality: Rate of death expressed as the fraction of a cohort dying over a period compared to the number alive at the beginning of the period (# total deaths during year / numbers alive at the beginning of the year). Optimists convert death rates into annual survival rate using the relationship
S=1-A.

ASPIC (A Surplus Production Model Incorporating Covariates): A non-equilibrium surplus production model developed by Prager (1995). ASPIC was frequently used by the Overfishing Definition Panel to define B_{MSY} and F_{MSY} reference points. The model output was also used to estimate rebuilding timeframes for the Amendment 9 control rules.

Bay: An inlet of the sea or other body of water usually smaller than a gulf; a small body of water set off from the main body; e.g. Ipswich Bay in the Gulf of Maine.

Benthic community: *Benthic* means the bottom habitat of the ocean, and can mean anything as shallow as a salt marsh or the intertidal zone, to areas of the bottom that are several miles deep in the ocean. *Benthic community* refers to those organisms that live in and on the bottom. (*In* meaning they live within the substrate; e.g, within the sand or mud found on the bottom. See *Benthic infauna*, below)

Benthic infauna: See *Benthic community*, above. Those organisms that live *in* the bottom sediments (sand, mud, gravel, etc.) of the ocean. As opposed to *benthic epifauna*, that live *on* the surface of the bottom sediments.

Benthivore: Usually refers to fish that feed on benthic or bottom dwelling organisms.

Berm: A narrow ledge typically at the top or bottom of a slope; e.g. a berm paralleling the shoreline caused by wave action on a sloping beach; also an elongated mound or wall of earth.

Biogenic habitats: Ocean habitats whose physical structure is created or produced by the animals themselves; e.g, coral reefs.

Biomass: The total mass of living matter in a given unit area or the weight of a fish stock or portion thereof. Biomass can be listed for beginning of year (Jan-1), Mid-Year, or mean (average during the entire year). In addition, biomass can be listed by age group (numbers at age * average weight at age) or summarized by groupings (e.g., age 1^+, ages 4+ 5, etc). See also spawning stock biomass, exploitable biomass, and mean biomass.

B_{MSY}: The stock biomass that would produce MSY when fished at a fishing mortality rate equal to F_{MSY}. For most stocks, B_{MSY} is about ½ of the carrying capacity. The proposed overfishing definition control rules call for action when biomass is below ¼ or ½ B_{MSY}, depending on the species.

$B_{threshold}$: 1) A limit reference point for biomass that defines an unacceptably low biomass i.e., puts a stock at high risk (recruitment failure, depensation, collapse, reduced long term yields, etc). 2) A biomass threshold that the SFA requires for defining when a stock is overfished. A stock is overfished if its biomass is below $B_{threshold}$. A determination of overfished triggers the SFA requirement for a rebuilding plan to achieve B_{target} as soon as possible, usually not to exceed 10 years except certain requirements are met. In Amendment 9 control rules, $B_{threshold}$ is often defined as either $1/2B_{MSY}$ or 1/4 B_{MSY}. $B_{threshold}$ is also known as $B_{minimum}$.

B_{target}: A desirable biomass to maintain fishery stocks. This is usually synonymous with B_{MSY} or its proxy.

Biomass weighted F: A measure of fishing mortality that is defined as an average of fishing mortality at age weighted by biomass at age for a ranges of ages within the stock (e.g., ages 1^+ biomass weighted F is a weighted average of the mortality for ages 1 and older, age 3^+ biomass weighted is a weighted average for ages 3 and older). Biomass weighted F can also be calculated using catch in weight over mean biomass. See also fully-recruited F.

Biota: All the plant and animal life of a particular region.

Bivalve: A class of mollusks having a soft body with plate-like gills enclosed within two shells hinged together; e.g., clams, mussels.

Bottom roughness: The inequalities, ridges, or projections on the surface of the seabed that are caused by the presence of bedforms, sedimentary structures, sedimentary particles, excavations, attached and unattached organisms, or other objects; generally small scale features.

Bottom tending mobile gear: All fishing gear that operates on or near the ocean bottom that is actively worked in order to capture fish or other marine species. Some examples of bottom tending mobile gear are otter trawls and dredges.

Bottom tending static gear: All fishing gear that operates on or near the ocean bottom that I snot actively worked; instead, the effectiveness of this gear depends on species moving to the gear which is set in a particular manner by a vessel, and later retrieved. Some examples of bottom tending static gear are gillnets, traps, and pots.

Boulder reef: An elongated feature (a chain) of rocks (generally piled boulders) on the seabed.

Bryozoans: Phylum aquatic organisms, living for the most part in colonies of interconnected individuals. A few to many millions of these individuals may form one colony. Some bryozoans encrust rocky surfaces, shells, or algae others form lacy or fan-like colonies that in some regions may form an abundant component of limestones. Bryozoan colonies range from millimeters to meters in size, but the individuals that make up the colonies are rarely larger than a millimeter. Colonies may be mistaken for hydroids, corals or seaweed.

Burrow: A hole or excavation in the sea floor made by an animal (as a crab, lobster, fish, burrowing anemone) for shelter and habitation.

Bycatch: (v.) The capture of nontarget species in directed fisheries which occurs because fishing gear and methods are not selective enough to catch only target species; (n.) fish which are harvested in a fishery but are not sold or kept for personal use, including economic discards and regulatory discards but not fish released alive under a recreational catch and release fishery management program.

Capacity: The level of output a fishing fleet is able to produce given specified conditions and constraints. Maximum fishing capacity results when all fishing capital is applied over the maximum amount of available (or permitted) fishing time, assuming that all variable inputs are utilized efficiently.

Catch: The sum total of fish killed in a fishery in a given period. Catch is given in either weight or number of fish and may include landings, unreported landings, discards, and incidental deaths.

Closed Area Model: A General Algebraic Modeling System (GAMS) model used to evaluate the effectiveness of effort controls used in the Northeast Multispecies Fishery. Using catch data from vessels in the fishery, the model estimates changes in exploitation that may result from changes in DAS, closed areas, and possession limits. These changes in exploitation are then converted to changes in fishing mortality to evaluate proposed measures.

Coarse sediment: Sediment generally of the sand and gravel classes; not sediment composed primarily of mud; but the meaning depends on the context, e.g. within the mud class, silt is coarser than clay.

Commensalism: See *Mutualism*. An interactive association of two species where one benefits in some way, while the other species is in no way affected by the association.

Continental shelf waters: The waters overlying the continental shelf, which extends seaward from the shoreline and deepens gradually to the point where the sea floor begins a slightly steeper descent to the deep ocean floor; the depth of the shelf edge varies, but is approximately 200 meters in many regions.

Control rule: A pre-determined method for determining fishing mortality rates based on the relationship of current stock biomass to a biomass target. Amendment 9 overfishing control rules define a target biomass (B_{MSY} or proxy) as a management objective. The biomass threshold ($B_{threshold}$ or B_{min}) defines a minimum biomass below which a stock is considered overfished.

Cohort: See yearclass.

Crustaceans: Invertebrates characterized by a hard outer shell and jointed appendages and bodies. They usually live in water and breathe through gills. Higher forms of this class include lobsters, shrimp and crawfish; lower forms include barnacles.

Days absent: An estimate by port agents of trip length. This data was collected as part of the NMFS weighout system prior to May 1, 1994.

Days-at-sea (DAS): The total days, including steaming time that a boat spends at sea to fish. Amendment 13 categorized DAS for the multispecies fishery into three categories, based on each individual vessel's fishing history during the period fishing year 1996 through 2001. The three categories are: Category A: can be used to target any groundfish stock; Category B: can only be used to target healthy stocks; Category C: cannot be used until some point in the future. Category B DAS are further divided equally into Category B (regular) and Category B (reserve).

DAS "flip": A practice in the Multispecies FMP that occurs when a vessel fishing on a Category B (regular) DAS must change ("flip") its DAS to a Category A DAS because it has exceeded a catch limit for a stock of concern.

Demersal species: Most often refers to fish that live on or near the ocean bottom. They are often called benthic fish, groundfish, or bottom fish.

Diatoms: Small mobile plants (algæ) with silicified (silica, sand, quartz) skeletons. They are among the most abundant phytoplankton in cold waters, and an important part of the food chain.

Discards: Animals returned to sea after being caught; see Bycatch (n.)

Dissolved nutrients: Non-solid nutrients found in a liquid.

Echinoderms: A member of the Phylum Echinodermata. Marine animals usually characterized by a five-fold symmetry, and possessing an internal skeleton of calcite plates, and a complex water vascular system. Includes echinoids (sea urchins), crinoids (sea lillies) and asteroids (starfish).

Ecosystem-based management: A management approach that takes major ecosystem components and services—both structural and functional—into account, often with a multispecies or habitat perspective

Egg stage: One of several marked phases or periods in the development and growth of many animals. The life history stage of an animal that occurs after reproduction and refers to the developing embryo, its food store, and sometimes jelly or albumen, all surrounded by an outer shell or membrane. Occurs before the *larval* or *juvenile stage*.

Elasmobranch: Any of numerous fishes of the class Chondrichthyes characterized by a cartilaginous skeleton and placoid scales: sharks; rays; skates.

Embayment: A bay or an indentation in a coastline resembling a bay.

Emergent epifauna: See *Epifauna*. Animals living upon the bottom that extend a certain distance above the surface.

Epifauna: See *Benthic infauna*. *Epifauna* are animals that live on the surface of the substrate, and are often associated with surface structures such as rocks, shells, vegetation, or colonies of other animals.

Essential Fish Habitat (EFH): Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The EFH designation for most managed species in this region is based on a legal text definition and geographical area that are described in the Habitat Omnibus Amendment (1998).

Estuarine area: The area of an estuary and its margins; an area characterized by environments resulting from the mixing of river and sea water.

Estuary: A water passage where the tide meets a river current; especially an arm of the sea at the lower end of a river; characterized by an environment where the mixing of river and seawater causes marked variations in salinity and temperature in a relatively small area.

Eutrophication: A set of physical, chemical, and biological changes brought about when excessive nutrients are released into the water.

Euphotic zone: The zone in the water column where at least 1% of the incident light at the surface penetrates.

Exclusive Economic Zone (EEZ): A zone in which the inner boundary is a line coterminous with the seaward boundary of each of the coastal States and the outer boundary is line 200 miles away and parallel to the inner boundary

Exempt fisheries: Any fishery determined by the Regional Director to have less than 5 percent regulated species as a bycatch (by weight) of total catch according to 50 CFR 648.80(a)(7).

Exploitable biomass: The biomass of fish in the portion of the population that is vulnerable to fishing.

Exploitation pattern: Describes the fishing mortality at age as a proportion of fully recruited F (full vulnerability to the fishery). Ages that are fully vulnerable experience 100% of the fully recruited F and are termed fully recruited. Ages that are only partially vulnerable experience a fraction of the fully recruited F and are termed partially recruited.

Ages that are not vulnerable to the fishery (including discards) experience no mortality and are considered pre-recruits. Also known as the partial recruitment pattern, partial recruitment vector or fishery selectivity.

Exploitation rate (u): The fraction of fish in the exploitable population killed during the year by fishing. This is an annual rate compared to F, which is an instantaneous rate. For example, if a population has 1,000,000 fish large enough to be caught and 550,000 are caught (landed and discarded) then the exploitation rate is 55%.

Fathom: A measure of length, containing six feet; the space to which a man can extend his arms; used chiefly in measuring cables, cordage, and the depth of navigable water by soundings.

Fishing mortality (F): A measurement of the rate of removal of fish from a population caused by fishing. This is usually expressed as an instantaneous rate (F) and is the rate at which fish are harvested at any given point in a year. Instantaneous fishing mortality rates can be either fully recruited or biomass weighted. Fishing mortality can also be expressed as an exploitation rate (see exploitation rate) or less commonly, as a conditional rate of fishing mortality (m, fraction of fish removed during the year if no other competing sources of mortality occurred. Lower case m should not be confused with upper case M, the instantaneous rate of natural mortality).

$F_{0.1}$: A conservative fishing mortality rate calculated as the F associated with 10 percent of the slope at origin of the yield-per-recruit curve.

F_{MAX}: A fishing mortality rate that maximizes yield per recruit. F_{MAX} is less conservative than $F_{0.1}$.

F_{MSY}: A fishing mortality rate that would produce MSY when the stock biomass is sufficient for producing MSY on a continuing basis.

$F_{threshold}$: 1) The maximum fishing mortality rate allowed on a stock and used to define overfishing for status determination. Amendment 9 frequently uses F_{MSY} or F_{MSY} proxy for $F_{threshold.}$ 2) The maximum fishing mortality rate allowed for a given biomass as defined by a control rule.

Fishing effort: The amount of time and fishing power used to harvest fish. Fishing power is a function of gear size, boat size and horsepower.

Framework adjustments: Adjustments within a range of measures previously specified in a fishery management plan (FMP). A change usually can be made more quickly and easily by a framework adjustment than through an amendment. For plans developed by the New England Council, the procedure requires at least two Council meetings including at least one public hearing and an evaluation of environmental impacts not already analyzed as part of the FMP.

Furrow: A trench in the earth made by a plow; something that resembles the track of a plow, as a marked narrow depression; a groove with raised edges.

Glacial moraine: A sedimentary feature deposited from glacial ice; characteristically composed of unsorted clay, sand, and gravel. Moraines typically are hummocky or ridge-shaped and are located along the sides and at the fronts of glaciers.

Glacial till: Unsorted sediment (clay, sand, and gravel mixtures) deposited from glacial ice.

Grain size: The size of individual sediment particles that form a sediment deposit; particles are separated into size classes (e.g. very fine sand, fine sand, medium sand, among others); the classes are combined into broader categories of mud, sand, and gravel; a sediment deposit can be composed of few to many different grain sizes.

Growth overfishing: Fishing at an exploitation rate or at an age at entry that reduces potential yields from a cohort but does not reduce reproductive output (see recruitment overfishing).

Halocline: The zone of the ocean in which salinity increases rapidly with depth.

Habitat complexity: Describes or measures a habitat in terms of the variability of its characteristics and its functions, which can be biological, geological, or physical in nature. Refers to how complex the physical structure of the habitat is. A bottom habitat with *structure-forming organisms*, along with other three dimensional objects such as boulders, is more complex than a flat, featureless, bottom.

Highly migratory species: Tuna species, marlin, oceanic sharks, sailfishes, and swordfish

Hydroids: Generally, animals of the Phylum Cnidaria, Class Hydrozoa; most hydroids are bush-like polyps growing on the bottom and feed on plankton, they reproduce asexually and sexually.

Immobile epifaunal species: See *epifauna*. Animals living on the surface of the bottom substrate that, for the most part, remain in one place.

Individual Fishing Quota (IFQ): Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by an individual person or entity

Juvenile stage: One of several marked phases or periods in the development and growth of many animals. The life history stage of an animal that comes between the *egg* or *larval stage* and the *adult stage*; juveniles are considered immature in the sense that they are not yet capable of reproducing, yet they differ from the larval stage because they look like smaller versions of the adults.

Landings: The portion of the catch that is harvested for personal use or sold.

Land runoff: The part of precipitation, snowmelt, or irrigation water that reaches streams (and thence the sea) by flowing over the ground, or the portion of rain or snow that does not percolate into the ground and is discharged into streams instead.

Larvae stage: One of several marked phases or periods in the development and growth of many animals. The first stage of development after hatching from the *egg* for many fish and invertebrates. This life stage looks fundamentally different than the juvenile and adult stages, and is incapable of reproduction; it must undergo metamorphosis into the juvenile or adult shape or form.

Lethrinids: Fish of the genus *Lethrinus*, commonly called emperors or nor'west snapper, are found mainly in Australia's northern tropical waters. Distinctive features of Lethrinids include thick lips, robust canine teeth at the front of the jaws, molar-like teeth at the side of the jaws and cheeks without scales. Lethrinids are carnivorous bottom-feeding fish with large, strong jaws.

Limited-access permits: Permits issued to vessels that met certain qualification criteria by a specified date (the "control date").

Lutjanids: Fish of the genus of the Lutjanidae: snappers. Marine; rarely estuarine. Some species do enter freshwater for feeding. Tropical and subtropical: Atlantic, Indian and Pacific Oceans.

Macrobenthos: See *Benthic community* and *Benthic infauna*. Benthic organisms whose shortest dimension is greater than or equal to 0.5 mm.

Maturity ogive: A mathematical model used to describe the proportion mature at age for the entire population. A_{50} is the age where 50% of the fish are mature.

Mean biomass: The average number of fish within an age group alive during a year multiplied by average weight at age of that age group. The average number of fish during the year is a function of starting stock size and mortality rate occurring during the year. Mean biomass can be aggregated over several ages to describe mean biomass for the stock. For example the mean biomass summed for ages 1 and over is the 1^+ mean biomass; mean biomass summed across ages 3 and over is 3^+ mean biomass.

Megafaunal species: The component of the fauna of a region that comprises the larger animals, sometimes defined as those weighing more than 100 pounds.

Mesh selectivity ogive: A mathematical model used to describe the selectivity of a mesh size (proportion of fish at a specific length retained by mesh) for the entire population. L_{25} is the length where 25% of the fish encountered are retained by the mesh. L_{50} is the length where 50% of the fish encountered are retained by the mesh.

Meter: A measure of length, equal to 39.37 English inches, the standard of linear measure in the metric system of weights and measures. It was intended to be, and is very nearly, the ten millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of a meridian.

Metric ton: A unit of weight equal to a thousand kilograms (1kgs = 2.2 lbs.). A metric ton is equivalent to 2,205 lbs. A thousand metric tons is equivalent to 2.2 million lbs.

Microalgal: Small microscopic types of algae such as the green algae.

Microbial: Microbial means of or relating to microorganisms.

Minimum spawning stock threshold: The minimum spawning stock size (or biomass) below which there is a significantly lower chance that the stock will produce enough new fish to sustain itself over the long term.

Mobile organisms: Organisms that are not confined or attached to one area or place, that can move on their own, are capable of movement, or are moved (often passively) by the action of the physical environment (waves, currents, etc.).

Molluscs: Common term for animals of the phylum Mollusca. Includes groups such as the bivalves (mussels, oysters etc.), cephalopods (squid, octopus etc.) and gastropods (abalone, snails). Over 80,000 species in total with fossils back to the Cambrian period.

Mortality: See Annual total mortality (A), Exploitation rate (u), Fishing mortality (F), Natural mortality (M), and instantaneous total mortality (Z).

Motile: Capable of self-propelled movement. A term that is sometimes used to distinguish between certain types of organisms found in water.

Multispecies: The group of species managed under the Northeast Multispecies Fishery Management Plan. This group includes whiting, red hake and ocean pout plus the regulated species (Atlantic cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake, redfish, Atlantic halibut, and Atlantic wolffish).

Mutualism: See *Commensalism*. A symbiotic interaction between two species in which both derive some benefit.

Natural disturbance: A change caused by natural processes; e.g. in the case of the seabed, changes can be caused by the removal or deposition of sediment by currents; such natural processes can be common or rare at a particular site.

Natural mortality: A measurement of the rate of death from all causes other than fishing such as predation, disease, starvation, and pollution. Commonly expressed as an instantaneous rate (M). The rate of natural mortality varies from species to species, but is assumed to be M=0.2 for the five critical stocks. The natural mortality rate can also be expressed as a conditional rate (termed n and not additive with competing sources of mortality such as fishing) or as annual expectation of natural death (termed v and additive with other annual expectations of death).

Nearshore area: The area extending outward an indefinite but usually short distance from shore; an area commonly affected by tides and tidal and storm currents, and shoreline processes.

Nematodes: A group of elongated, cylindrical worms belonging to the phylum Nematoidea, also called thread-worms or eel-worms. Some non-marine species attack roots or leaves of plants, others are parasites on animals or insects.

Nemerteans: Proboscis worms belonging to the phylum Nemertea, and are soft unsegmented marine worms that have a threadlike proboscis and the ability to stretch and contract.

Nemipterids: Fishes of the Family Nemipteridae, the threadfin breams or whiptail breams. Distribution: Tropical and sub-tropical Indo-West Pacific.

Northeast Shelf Ecosystem: The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream.

Northwest Atlantic Analysis Area (NAAA): A spatial area developed for analysis purposes only. The boundaries of this the area are within the 500 fathom line to the east, the coastline to the west, the Hague line to the north, and the North Carolina/ South Carolina border to the south. The area is approximately 83,550 square nautical miles, and is used as the denominator in the EFH analysis to determine the percent of sediment, EFH, and biomass contained in an area, as compared to the total NAAA.

Nutrient budgets: An accounting of nutrient inputs to and production by a defined ecosystem (e.g., salt marsh, estuary) versus utilization within and export from the ecosystem.

Observer: Any person required or authorized to be carried on a vessel for conservation and management purposes by regulations or permits under this Act

Oligochaetes: See *Polychaetes*. Oligochaetes are worms in the phylum Annelida having bristles borne singly along the length of the body.

Open access: Describes a fishery or permit for which there is no qualification criteria to participate. Open-access permits may be issued with restrictions on fishing (for example, the type of gear that may be used or the amount of fish that may be caught).

Opportunistic species: Species that colonize disturbed or polluted sediments. These species are often small, grow rapidly, have short life spans, and produce many offspring.

Optimum Yield (OY): The amount of fish which A) will provide the greatest overall benefit to the nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor; and C) in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the maximum sustainable yield in such fishery

Organic matter: Material of, relating to, or derived from living organisms.

Overfished: A conditioned defined when stock biomass is below minimum biomass threshold and the probability of successful spawning production is low.

Overfishing: A level or rate of fishing mortality that jeopardizes the long-term capacity of a stock or stock complex to produce MSY on a continuing basis.

Peat bank: A bank feature composed of partially carbonized, decomposed vegetable tissue formed by partial decomposition of various plants in water; may occur along shorelines.

Pelagic gear: Mobile or static fishing gear that is not fixed, and is used within the water column, not on the ocean bottom. Some examples are mid-water trawls and pelagic longlines.

Phytoplankton: Microscopic marine plants (mostly algae and diatoms) which are responsible for most of the photosynthetic activity in the oceans.

Piscivore: A species feeding preferably on fish.

Planktivore: An animal that feeds on plankton.

Polychaetes: Polychaetes are segmented worms in the phylum Annelida. Polychaetes (poly-chaetae = many-setae) differ from other annelids in having many setae (small bristles held in tight bundles) on each segment.

Porosity: The amount of free space in a volume of a material; e.g. the space that is filled by water between sediment particles in a cubic centimeter of seabed sediment.

Possession-limit-only permit: An open-access permit (see above) that restricts the amount of multispecies a vessel may retain (currently 500 pounds of "regulated species").

Potential Sector Contribution (PSC): The percentage of the available catch a limited access permit is entitled to after joining a sector. Based on landings history as defined in Amendment 16. The sum of the PSC's in a sector is multiplied by the groundfish sub-ACL to get the ACE for the sector.

Pre-recruits: Fish in size or age groups that are not vulnerable to the fishery (including discards).

Prey availability: The availability or accessibility of prey (food) to a predator. Important for growth and survival.

Primary production: The synthesis of organic materials from inorganic substances by photosynthesis.

Recovery time: The period of time required for something (e.g. a habitat) to achieve its former state after being disturbed.

Recruitment: The amount of fish added to the fishery each year due to growth and/or migration into the fishing area. For example, the number of fish that grow to become vulnerable to fishing gear in one year would be the recruitment to the fishery. "Recruitment" also refers to new year classes entering the population (prior to recruiting to the fishery).

Recruitment overfishing: Fishing at an exploitation rate that reduces the population biomass to a point where recruitment is substantially reduced.

Regulated groundfish species: Atlantic cod, haddock, pollock, yellowtail flounder, winter flounder, witch flounder, American plaice, windowpane flounder, white hake, redfish, Atlantic halibut, and Atlantic wolffish. These species are usually targeted with large-mesh net gear.

Relative exploitation: An index of exploitation derived by dividing landings by trawl survey biomass. This measure does not provide an absolute magnitude of exploitation but allows for general statements about trends in exploitation.

Retrospective pattern: A pattern of systematic over-estimation or underestimation of terminal year estimates of stock size, biomass or fishing mortality compared to that estimate for that same year when it occurs in pre-terminal years.

Riverine area: The area of a river and its banks.

Saurids: Fish of the family Scomberesocidae, the sauries or needlefishes. Distribution: tropical and temperate waters.

Scavenging species: An animal that consumes dead organic material.

Sea whips: A coral that forms long flexible structures with few or no branches and is common on Atlantic reefs.

Sea pens: An animal related to corals and sea anemones with a featherlike form.

Sediment: Material deposited by water, wind, or glaciers.

Sediment suspension: The process by which sediments are suspended in water as a result of disturbance.

Sedentary: See *Motile* and *Mobile organisms*. Not moving. Organisms that spend the majority of their lives in one place.

Sedimentary bedforms: Wave-like structures of sediment characterized by crests and troughs that are formed on the seabed or land surface by the erosion, transport, and deposition of particles by water and wind currents; e.g. ripples, dunes.

Sedimentary structures: Structures of sediment formed on the seabed or land surface by the erosion, transport, and deposition of particles by water and wind currents; e.g. ripples, dunes, buildups around boulders, among others.

Sediment types: Major combinations of sediment grain sizes that form a sediment deposit, e.g. mud, sand, gravel, sandy gravel, muddy sand, among others.

Spawning adult stage: See *adult stage*. Adults that are currently producing or depositing eggs.

Spawning stock biomass (SSB): The total weight of fish in a stock that sexually mature, i.e., are old enough to reproduce.

Species assemblage: Several species occurring together in a particular location or region

Species composition: A term relating the relative abundance of one species to another using a common measurement; the proportion (percentage) of various species in relation to the total on a given area.

Species diversity: The number of different species in an area and their relative abundance

Species richness: See *Species diversity*. A measurement or expression of the number of species present in an area; the more species present, the higher the degree of species richness.

Species with vulnerable EFH: If a species was determined to be "highly" or "moderately" vulnerable to bottom tending gears (otter trawls, scallop dredges, or clam dredges) then it was included in the list of species with vulnerable EFH. Currently there are 23 species and life stages that are considered to have vulnerable EFH for this analysis.

Status Determination: A determination of stock status relative to $B_{threshold}$ (defines overfished) and $F_{threshold}$ (defines overfishing). A determination of either overfished or overfishing triggers a SFA requirement for rebuilding plan (overfished), ending overfishing (overfishing) or both.

Stock: A grouping of fish usually based on genetic relationship, geographic distribution and movement patterns. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod). A species, subspecies, geographical grouping, or other category of fish capable of management as a unit.

Stock assessment: Determining the number (abundance/biomass) and status (life-history characteristics, including age distribution, natural mortality rate, age at maturity, fecundity as a function of age) of individuals in a stock

Stock of concern: A regulated groundfish stock that is overfished, or subject to overfishing.

Structure-forming organisms: Organisms, such as corals, colonial bryozoans, hydroids, sponges, mussel beds, oyster beds, and seagrass that by their presence create a three-dimensional physical structure on the bottom. See *biogenic habitats*.

Submerged aquatic vegetation: Rooted aquatic vegetation, such as seagrasses, that cannot withstand excessive drying and therefore live with their leaves at or below the water surface in shallow areas of estuaries where light can penetrate to the bottom sediments. SAV provides an important habitat for young fish and other aquatic organisms.

Surficial sediment: Sediment forming the sea floor or land surface; thickness of the surficial layer may vary.

Surplus production: Production of new stock biomass defined by recruitment plus somatic growth minus biomass loss due to natural deaths. The rate of surplus production is directly proportional to stock biomass and its relative distance from the maximum stock size at carrying capacity (K). B_{MSY} is often defined as the biomass that maximizes surplus production rate.

Surplus production models: A family of analytical models used to describe stock dynamics based on catch in weight and CPUE time series (fishery dependent or survey) to construct stock biomass history. These models do not require catch at age information. Model outputs may include stock biomass history, biomass weighted fishing mortality rates, MSY, F_{MSY}, B_{MSY}, K, (maximum population biomass where stock growth and natural deaths are balanced) and r (intrinsic rate of increase).

Survival rate (S): Rate of survival expressed as the fraction of a cohort surviving a period compared to number alive at the beginning of the period (# survivors at the end of the year / numbers alive at the beginning of the year). Pessimists convert survival rates into annual total mortality rate using the relationship A=1-S.

Survival ratio (R/SSB): An index of the survivability from egg to age-of-recruitment. Declining ratios suggest that the survival rate from egg to age-of-recruitment is declining.

TAC: Total allowable catch. This value is calculated by applying a target fishing mortality rate to exploitable biomass.

Taxa: The plural of taxon. Taxon is a named group or organisms of any rank, such as a particular species, family, or class.

Ten-minute- "squares" of latitude and longitude (TMS): Are a measure of geographic space. The actual size of a ten-minute-square varies depending on where it is on the surface of the earth, but in general each square is approximately 70-80 square nautical miles in this region. This is the spatial area that EFH designations, biomass data, and some of the effort data have been binned into for analysis purposes in various sections of this document.

Topography: The depiction of the shape and elevation of land and sea floor surfaces.

Total Allowable Catch (TAC): The amount (in metric tons) of a stock that is permitted to be caught during a fishing year. In the Multispecies FMP, TACs can either be "hard" (fishing ceases when the TAC is caught) or a "target" (the TAC is merely used as an indicator to monitor effectiveness of management measures, but does not trigger a closure of the fishery).

Total mortality: The rate of mortality from all sources (fishing, natural, pollution) Total mortality can be expressed as an instantaneous rate (called Z and equal to F + M) or Annual rate (called A and calculated as the ratio of total deaths in a year divided by number alive at the beginning of the year)

Trophic guild: Trophic is defined as the feeding level within a system that an organism occupies; e.g., predator, herbivore. A guild is defined as a group of species that exploit the same class of environmental resources in a similar way. The trophic guild is a utilitarian concept covering both structure and organization that exists between the structural categories of trophic groups and species.

Turbidity: Relative water clarity; a measurement of the extent to which light passing through water is reduced due to suspended materials.

Two-bin (displacement) model: A model used to estimate the effects of area closures. This model assumes that effort from the closed areas (first bin) is displaced to the open areas (second bin). The total effort in the system is then applied to the landings-per-unit-effort (LPUE) in open areas to obtain a projected catch. The percent reduction in catch is calculated as a net result.

Vulnerability: In order to evaluate the potential adverse effects of fishing on EFH, the vulnerability of each species EFH was determined. This analysis defines vulnerability as the likelihood that the functional value of EFH would be adversely affected as a result of fishing with different gear types. A number of criteria were considered in the evaluation of the vulnerability of EFH for each life stage including factors like the function of habitat for shelter, food and/or reproduction.

Yield-per-recruit (YPR): The expected yield (weight) of individual fish calculated for a given fishing mortality rate and exploitation pattern and incorporating the growth characteristics and natural mortality.

Yearclass: Also called cohort. Fish that were spawned in the same year. By convention, the "birth date" is set to January 1st and a fish must experience a summer before turning 1. For example, winter flounder that were spawned in February-April 1997 are all part of the 1997 cohort (or year-class). They would be considered age 0 in 1997, age 1 in 1998, etc. A summer flounder spawned in October 1997 would have its birth date set to the following January 1 and would be considered age 0 in 1998, age 1 in 1999, etc.

Z: Instantaneous rate of total mortality. The components of Z are additive (i.e., Z = F+M)

Zooplankton: See *Phytoplankton*. Small, often microscopic animals that drift in currents. They feed on detritus, phytoplankton, and other zooplankton. They are preyed upon by fish, shellfish, whales, and other zooplankton.

11.0 APPENDIX

Table 42. Catch and Status Table: Pollock in US Waters of Areas 5&6

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Min	Max	Mean
Comm Lands (mt)	4043	4109	3580	4794	5070	6509	6067	8372	9965	7477	2962	24994	10723
Comm Disc (mt)	117	73	68	45	103	100	69	147	362	*362*[1]	45	473	164
Rec Lands (mt)	243	471	547	499	669	520	571	533	941	468	50	941	355
Rec Disc[2] (mt)	356	875	613	472	241	272	252	227	926	428	34	926	327
SSB (000mt)	130.3	141.4	165.9	198.1	213.3	221.3	235.3	223.1	226.7	195.9	68.4	326.2	175.7
Ave F on ages 5-7	0.061	0.066	0.048	0.047	0.037	0.038	0.034	0.051	0.082	0.071	0.034	0.487	0.157
Full F	0.072	0.077	0.057	0.057	0.061	0.062	0.057	0.085	0.134	0.117	0.057	0.509	0.177
Recr (000s)	50187	22357	34651	13773	18034	11877	13966	16337	20788	20780	7241	57471	21343

[1]The value for commercial discards in 2009 was assumed to be equal to the value in 2008.
[2]Recreational discards were calculated assuming 100% discard mortality.

Table 43. Percentiles of pollock spawning stock biomass (000s mt) for projections at Fstatus quo, 0.75*F40%, and F40%.

	F-status-quo = 0.07 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	136.1	150.7	158.4	173.2	190.5	211.6	231.4	245.2	270.6
2011	128.1	141.3	146.7	161.6	176.9	195.6	212.7	225.0	249.2
2012	124.8	136.7	141.8	154.8	169.6	185.9	202.5	213.5	234.3
2013	122.8	133.9	138.7	151.2	164.9	180.7	195.8	206.4	225.8
2014	124.2	133.6	139.1	150.4	163.4	178.4	193.2	202.9	222.9
2015	125.8	134.7	140.4	151.1	163.6	178.0	192.0	201.2	221.0
2016	126.6	136.0	141.8	152.1	164.7	179.0	192.7	201.8	220.9
2017	126.5	136.2	142.1	152.4	165.3	179.7	194.0	203.0	221.4
	0.75*F40% = 0.19 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	136.1	150.7	158.4	173.2	190.5	211.6	231.4	245.2	270.6
2011	119.7	132.2	137.5	151.4	165.5	183.0	199.5	210.6	233.6
2012	110.0	120.6	124.9	136.5	149.6	163.8	178.7	187.8	206.7
2013	103.2	112.7	116.8	127.1	138.8	152.0	165.1	173.1	190.8
2014	100.1	107.7	112.1	121.2	131.6	143.8	155.7	163.2	180.6
2015	97.1	104.3	108.7	116.8	126.7	138.0	148.7	155.7	171.2
2016	93.6	101.0	105.3	113.1	122.8	133.8	144.7	151.7	165.9
2017	90.0	97.4	101.8	109.6	119.5	130.6	142.0	149.1	163.2

	F40% = 0.25 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	136.1	150.7	158.4	173.2	190.5	211.6	231.4	245.2	270.6
2011	115.6	127.8	132.9	146.2	160.0	177.0	192.9	203.6	225.8
2012	103.5	113.3	117.3	128.1	140.5	153.9	168.0	176.2	194.1
2013	94.9	103.3	107.2	116.6	127.3	139.5	151.7	158.8	175.6
2014	90.0	96.8	100.8	109.0	118.3	129.3	140.0	146.7	162.7
2015	85.7	92.0	96.0	103.1	111.9	122.0	131.5	137.8	151.4
2016	80.8	87.3	91.1	98.0	106.7	116.5	126.4	132.7	145.3
2017	76.4	82.8	86.7	93.6	102.4	112.4	122.8	129.3	142.1

Table 44. Percentiles of landings (000s mt) of pollock for projections at Fstatus quo, 0.75*F40%, and F40%.

	F-status-quo = 0.07 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	5.7	6.3	6.6	7.2	7.9	8.7	9.5	10.2	11.1
2011	5.4	5.9	6.1	6.7	7.3	8.1	8.8	9.4	10.1
2012	5.3	5.7	6.0	6.5	7.1	7.8	8.4	8.9	9.6
2013	5.6	6.0	6.3	6.9	7.5	8.1	8.9	9.3	10.2
2014	5.9	6.4	6.7	7.3	7.9	8.7	9.5	10.0	11.1
2015	6.3	6.8	7.1	7.7	8.3	9.2	9.9	10.4	11.7
2016	6.4	6.9	7.2	7.8	8.5	9.3	10.1	10.7	11.7
2017	6.1	6.6	6.9	7.6	8.4	9.3	10.4	11.2	12.6
	0.75*F40% = 0.19 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	14.1	15.5	16.1	17.7	19.5	21.5	23.3	25.0	27.3
2011	12.3	13.3	13.9	15.2	16.6	18.3	19.9	21.2	22.8
2012	11.3	12.3	12.8	13.9	15.2	16.7	18.1	19.2	20.7
2013	11.5	12.4	13.1	14.2	15.4	16.8	18.4	19.2	21.4
2014	11.8	12.8	13.4	14.6	15.8	17.5	19.0	20.0	22.3
2015	12.2	13.2	13.8	14.9	16.2	17.8	19.2	20.2	22.6
2016	12.1	13.1	13.6	14.7	16.1	17.6	19.3	20.5	22.6
2017	11.0	12.0	12.7	13.9	15.5	17.4	19.8	21.3	23.9
	F40% = 0.25 (average F on ages 5-7)								
YEAR	1%	5%	10%	25%	50%	75%	90%	95%	99%
2010	18.3	20.0	20.8	22.9	25.2	27.9	30.1	32.4	35.3
2011	15.3	16.6	17.2	18.8	20.6	22.7	24.7	26.2	28.3
2012	13.7	14.9	15.5	16.8	18.3	20.1	21.9	23.2	25.0
2013	13.7	14.7	15.5	16.8	18.3	19.9	21.8	22.8	25.5
2014	13.8	14.9	15.6	17.0	18.5	20.4	22.1	23.3	26.0
2015	14.1	15.2	15.9	17.1	18.7	20.5	22.1	23.2	26.0
2016	13.7	14.8	15.5	16.7	18.3	20.1	22.1	23.5	26.1
2017	12.2	13.4	14.2	15.6	17.5	19.8	22.5	24.3	27.4

Figure 7. Components of total catch for pollock by fleet (Commercial and Recreational).

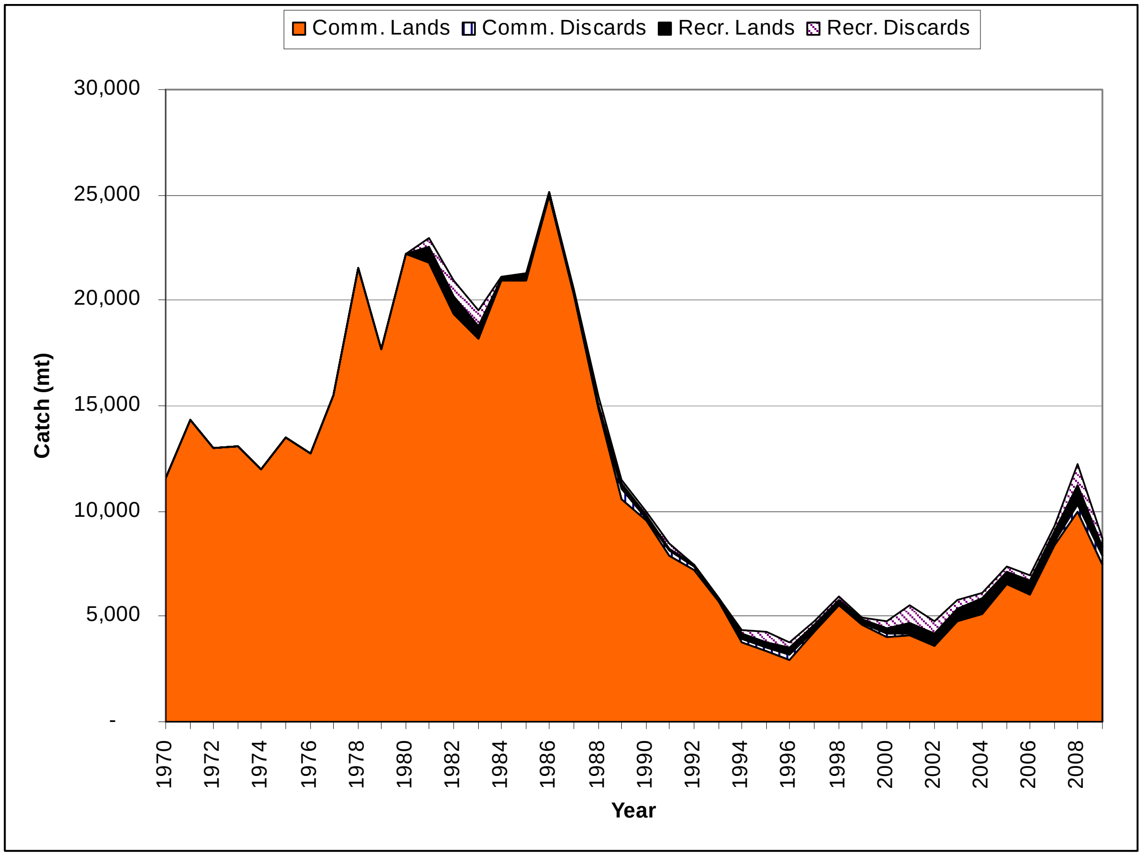


Figure 8. Distributions of SSB_{MSY} and MSY for pollock based on stochastic projections at $F_{40\%}$. The median estimates are 91,000 mt for SSB_{MSY} and 16,000 mt for MSY, based on projections that used $F_{40\%}$ as a proxy for F_{MSY}.

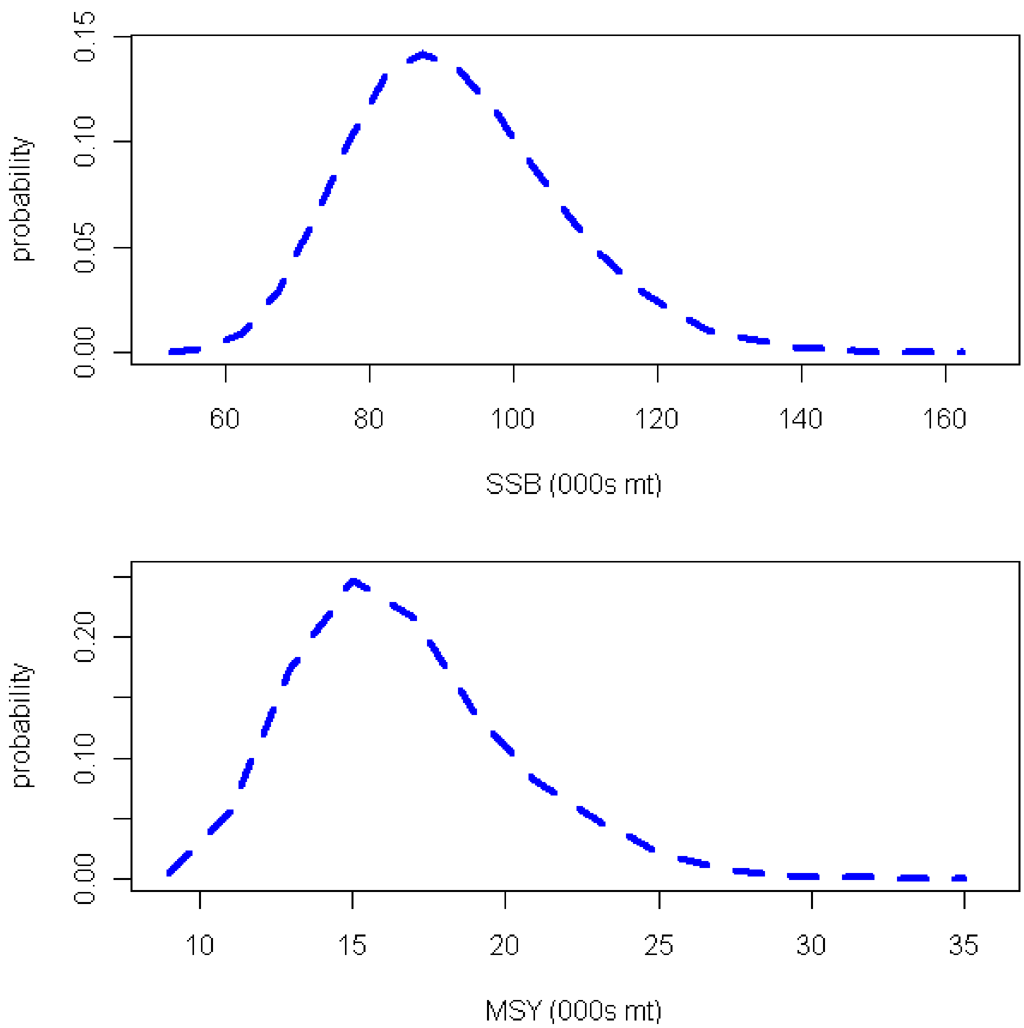


Figure 9. Uncertainty in average F on ages 5-7 ($F_{5\text{-}7}$) pollock in 2009 for two MCMC chains (dotted blue and solid green lines). The vertical dashed red line indicates the point estimate.

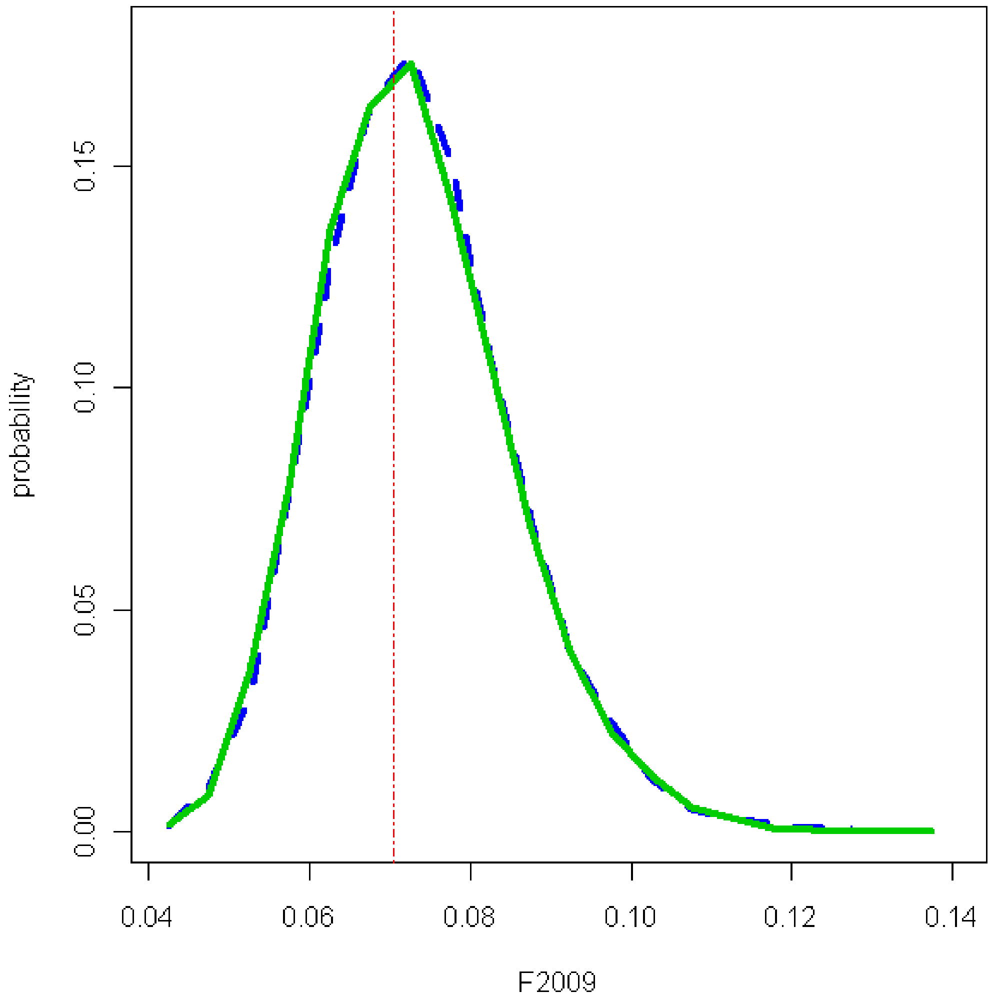


Figure 10. ASAP base model estimated time series of fully selected F for pollock. The solid red (ascending) line is $F_{40\%}$ calculated for years 1974-2009 with a 5 year moving average of weights at age, selectivity at age, and maturity at age. The $F_{40\%}$ in 1974 used years (1970-1974) while the final $F_{40\%}$ used years (2005-2009).

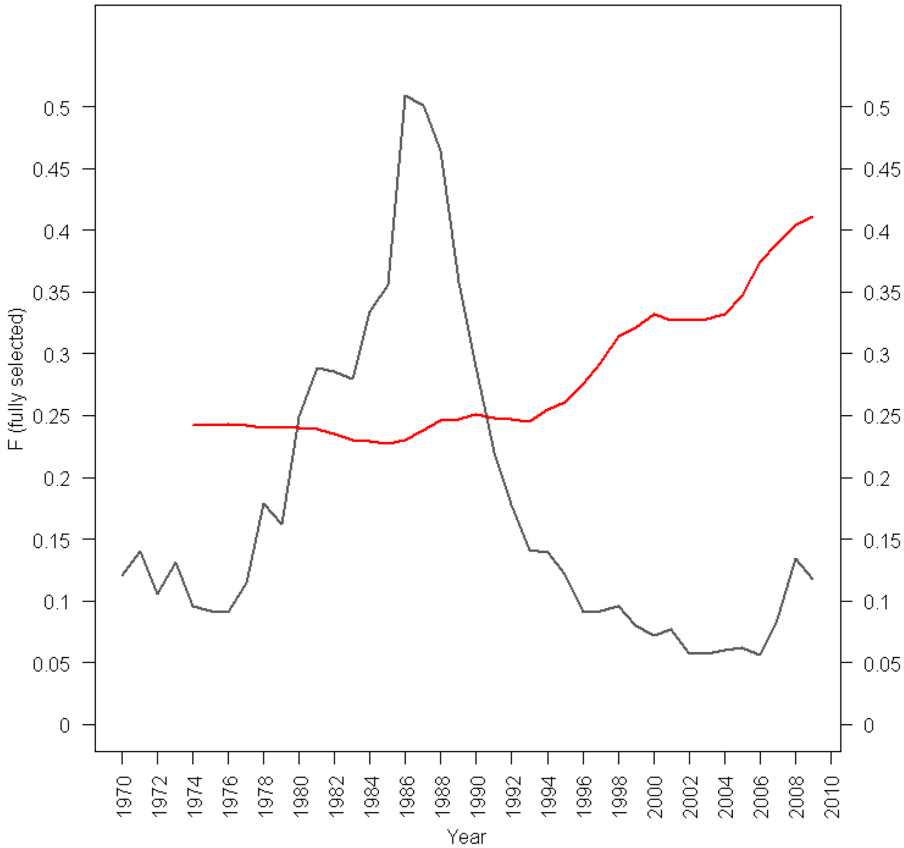


Figure 11. ASAP base model estimate of fishing mortality at age for pollock.

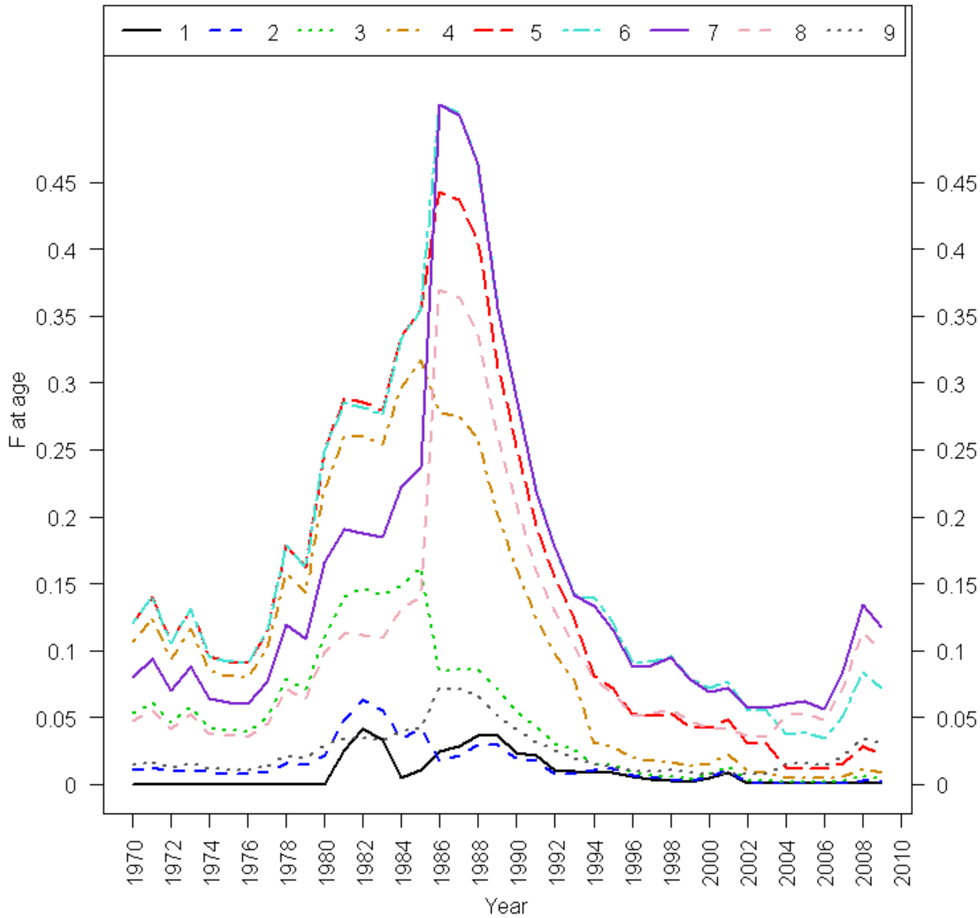


Figure 12. Annual estimates of three biomass measures (mt) for pollock from the ASAP base model.

Figure 13. Posterior distribution for pollock spawning stock biomass (SSB) in 2009 for two MCMC chains (dotted blue and solid green lines). The vertical dashed red line indicates the point estimate.

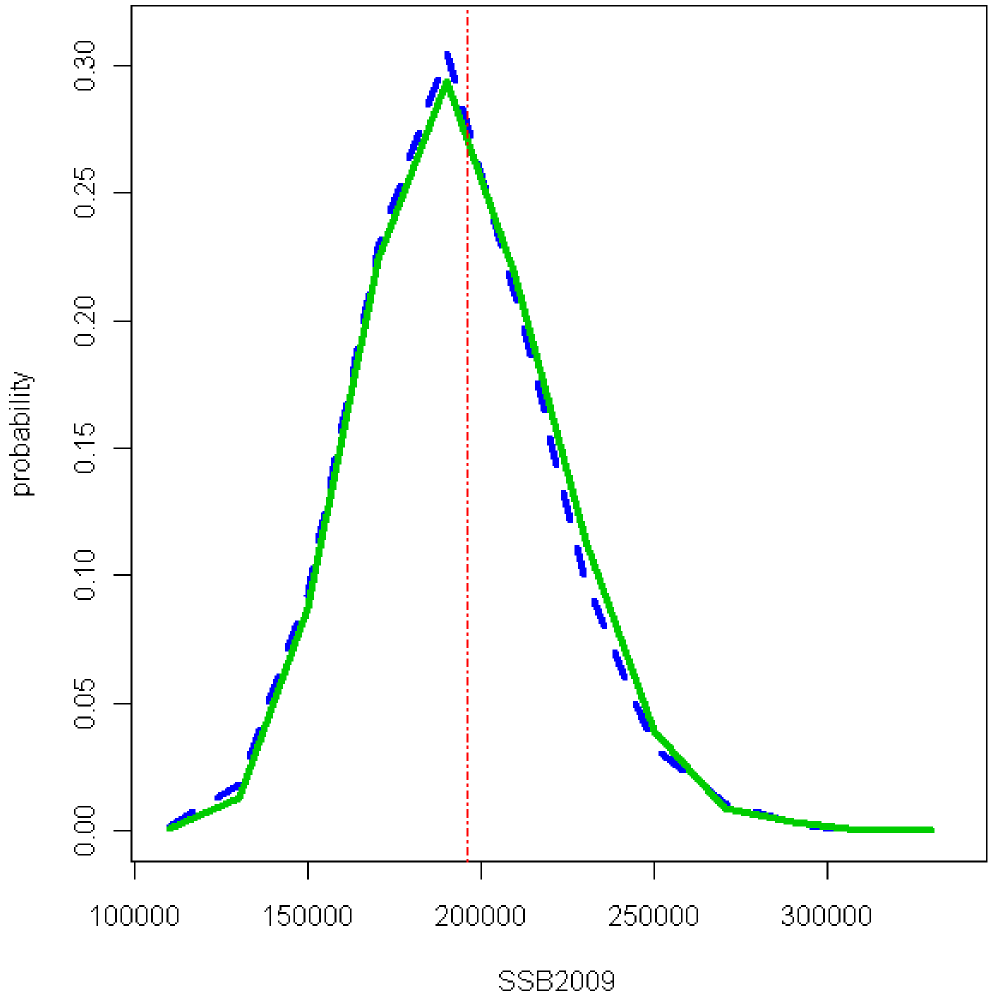
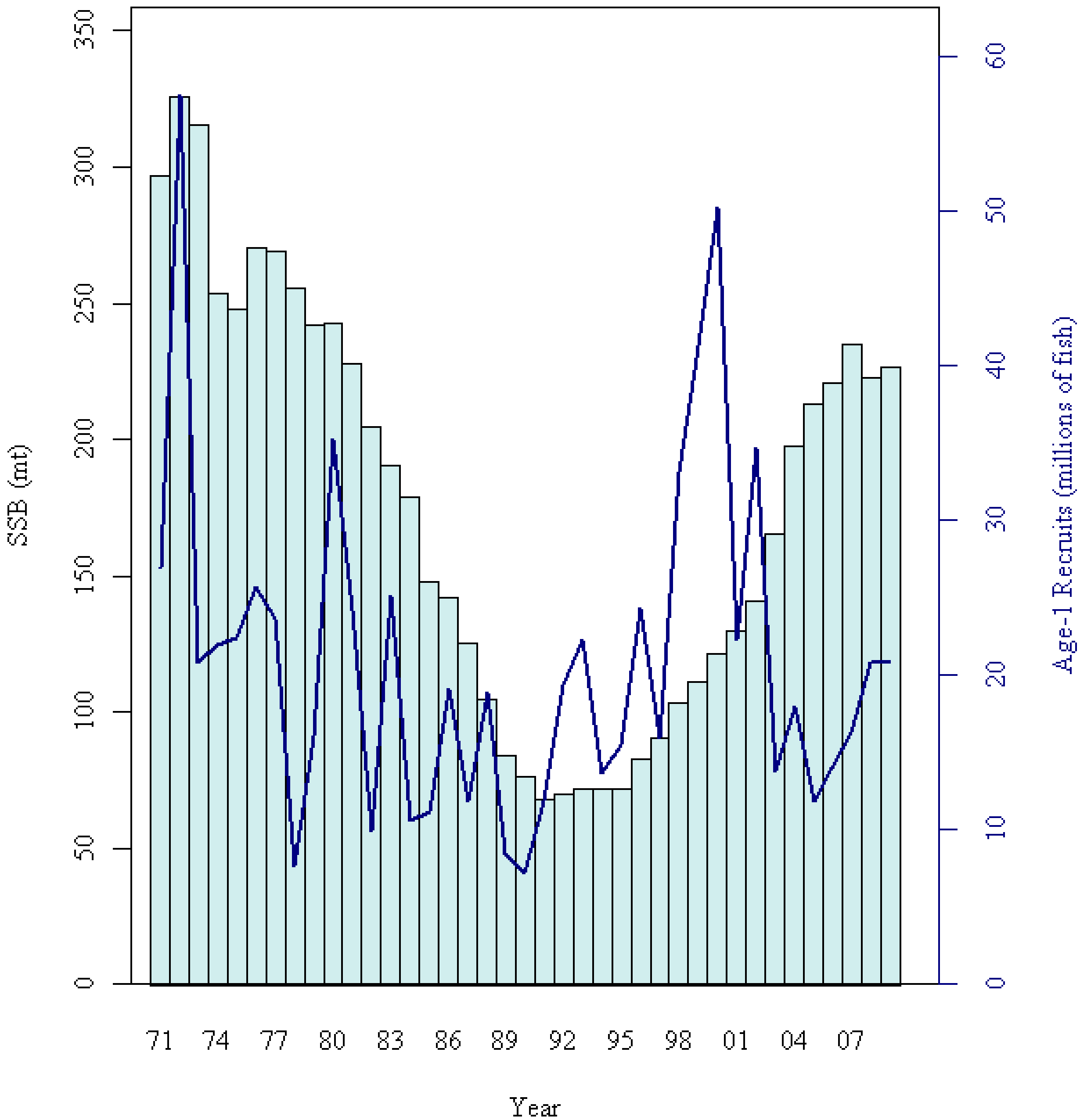


Figure 14. Time series of spawning biomass (solid bars) and age-1 recruitment (solid line) of pollock.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

SEP - 2 2008

Paul J. Howard
Executive Director
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Paul:

As you are aware, the latest Groundfish Assessment Review Meeting (GARM III) was held from August 4-8, 2008, to conduct benchmark stock assessments for the 19 stocks managed under the Northeast (NE) Multispecies Fishery Management Plan (FMP). The results of those assessments are summarized in the September 2, 2008, report that will be presented by staff from the Northeast Fisheries Science Center to the New England Fishery Management Council (Council) at its September 3-4, 2008 meeting.

The results of the GARM III indicate that the status of several stocks managed by the FMP has changed since the last assessment in 2005. Specifically, several stocks that were previously not overfished or subject to overfishing have experienced excessive fishing mortality and have been reduced below the spawning stock biomass thresholds established in the FMP. These stocks include pollock, Northern windowpane flounder, Gulf of Maine (GOM) and Georges Bank (GB) winter flounder, and witch flounder. Other stocks continue to be subject to overfishing or are declining in biomass, such as GOM cod, Cape Cod/GOM yellowtail flounder, Southern New England/Mid-Atlantic (SNE/MA) yellowtail flounder, SNE/MA winter flounder, white hake, ocean pout, and Atlantic halibut.

Given this new information from GARM III, and pursuant to section 304(e)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), I am providing notification to the Council that, based upon the best available information, the following stocks are subject to overfishing and are in an overfished condition: Pollock, Northern windowpane flounder, GOM and GB winter flounder, and witch flounder. That is, the 2007 fishing mortality rates for these stocks exceed the specified maximum fishing mortality rates, and the 2007 biomass estimates are below the specified biomass thresholds. The Magnuson-Stevens Act requires that the Council must take action within 1 year of this notice to end overfishing and to adopt conservation and management measures to rebuild these stocks in accordance with the National Standard Guidelines. I recommend that measures to address the condition of these stocks be implemented through Amendment 16 to the FMP, and look forward to working with you on this important matter.

Sincerely,

Patricia A. Kurkul
Regional Administrator

New England Fishery Management Council
50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116
John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

September 16, 2008

Ms. Patricia Kurkul, Regional Administrator
National Marine Fisheries Service
One Blackburn Drive
Gloucester, MA 01930

Dear Pat:

Your letter of September 2, 2008 notified the Council of the results of the Groundfish Assessment Review Meeting (GARM III). It also reported changes in stock status as a result of those assessments. I have some concerns that I want to bring to your attention.

According to the letter, GOM winter flounder has been determined to be overfished and subject to overfishing. The GARM III report does not provide any support for this conclusion. While it is true that the Executive Summary of the GARM III report includes this listing, the actual chapter on GOM winter flounder does not. In fact, the Peer Review Panel (Panel) summarized its conclusions in the following paragraphs (emphasis added):

> "Given the problems encountered, the Panel agreed that **none of the models put forth gave a clear picture of the status of the resource. Further, the Panel noted that until these issues were resolved, the proposed analysis could not be used to provide management advice nor stock projections.**
>
> **While the Panel was unable to determine the stock's status relative to the BRPs**, it agreed that the current trend in the population was very troubling. The Panel generally agreed that it is highly likely that biomass is below B_{MSY}, and that there is a substantial probability that it is below ½ B_{MSY}. The Panel noted that other stocks in the area of this mixed fishery were also at low levels."

Given the Panel's unequivocal rejection of any of the models presented, the Executive Summary errs when it presents estimates of fishing mortality and stock biomass for this stock *from on an explicitly rejected assessment model*. The report also erred by providing projections results, again contrary to the clear language of the Panel. The status of this stock should be reported as unknown. This is not to suggest there are no concerns for this stock, as noted by the Panel, which is clearly not rebuilt and may indeed be overfished.

Your letter also reports that pollock was overfished and overfishing was occurring as of 2007. The biomass reference point for pollock is an index-based proxy first recommended by the Reference Point Working Group in 2002. Significantly, that document determined biomass status by using a centered three-year moving average of the fall survey index. As an example, status in 2005 is based on the average of the survey indices for 2004, 2005 and 2006. This means that status cannot be determined for 2007 until the 2008 fall trawl survey index is available. The 2007 value reported in Table 2 of the report is 0.754 kg/tow. This does not appear be the *average* of anything - it is the same value reported for the 2007 fall survey in Table M.1. There is no justification in the report, and there was no discussion at the meeting suggesting that a single year of the trawl survey index should be used as a biomass proxy.

This error results in an incorrect determination of status for pollock. The centered three-year average of the trawl survey index for 2006 is 1.42 kg/tow, more than half the GARM III recommended B_{msy}-proxy of 2.0 kg/tow. As I said previously, consistent with the approved reference points, the status for 2007 cannot be determined until the fall survey is completed in 2008. The relative exploitation index is also based on a centered three-year average of the trawl survey index. As a result, the 2007 relative exploitation index cannot be determined. In 2006, the relative exploitation index, based on a centered three-year average, was 5.03, less than the F_{MSY} proxy of 5.66, and overfishing was not occurring. However, given the recent decline in the trawl survey index, pollock should be reported as approaching an overfished condition.

Finally, please note that Amendment 13, approved by the Secretary of Commerce, made it clear that status determination criteria are not effective until adopted by the Council. ("Over time, development of new analytic techniques or additional data may result in scientific advice recommending changes to the status determination criteria parameters. In order to comply with M-S Act requirements that status determination criteria be determined by the Council, a Council action is necessary to change the status determination criteria parameters.") Further, Amendment 13 made it clear that any changes to numerical estimates of parameters that resulted from the GARM III review would only become effective when adopted by the Council ("For this review, any updated numerical estimates will be adopted through a Council management action - amendment or framework adjustment.") This is essentially the same stance taken by NMFS on the recent change in monkfish reference points that resulted from an assessment in August 2007. NMFS continued to report stock status based on the old status determination criteria until the new reference criteria were formally adopted by the Council in a change to the fishery management plan.
In conclusion, I recommend the following:

(1) That the status of GOM winter flounder be reported as unknown in the quarterly status report, consistent with the GARM III peer review Panel's rejection of all assessment models presented and the Panel's explicit statement that they could not determine status with respect to the biological reference points.

(2) That the status of pollock be revised to approaching an overfished condition and overfishing not occurring as of 2006, the last year that this determination can be made in a manner consistent with recommended status determination criteria.

(3) And for the quarterly status reports, that a more consistent policy be considered for when status determination criteria become effective.

I look forward to your response.

Sincerely,

Paul

Paul J. Howard
Executive Director

cc: Nancy Thompson, NEFSC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

September 25, 2008

MEMORANDUM FOR: Patricia A. Kurkul
Regional Administrator, NER

FROM: Nancy B. Thompson, Ph.D.
Science and Research Director

Nancy B. Thompson

SUBJECT: NEFSC Response to GARM-III Issues Raised by Paul Howard

The NEFSC reviewed Paul Howard's letter of September 16, 2008. The following text addresses the GOM winter flounder and pollock issues. In the case of GOM winter flounder, the models did not fit well and the assessment was very uncertain. Fully aware of the uncertainties, the GARM Panel offered guidance on stock status. It now seems up to the managers to decide whether to use that guidance. For pollock, the method for determining overfished stock status should have been based on an average of recent indices, and this is explained further below.

GOM WINTER FLOUNDER

Paul Howard's letter is correct in pointing out that there are contradictory statements in the GARM III (NEFSC 2008) report about whether GOM winter flounder stock status can be determined. These statements resulted from the fact that this assessment was very uncertain, a point that was clearly made in the GARM III Report by both the assessment scientists and the GARM III Review Panel.

Because there was so much uncertainty, the Panel had a difficult time deciding whether a status determination was possible, and that is reflected in their statements. Although the models did not fit well, in the end the Panel felt that it "generally agreed that it is highly likely that biomass is below B_{MSY}, and that there is a substantial probability that it is below ½ B_{MSY}." Fully aware of the uncertainty of the model results, the Panel made that statement to give some guidance to managers. This was as far as they could take it.

Everyone agrees that the results are very uncertain. At this stage, it is largely a judgment call whether to use the results from the final model (as was done in the GARM III report) or to conclude that the status is unknown.

Based on GARM II (NEFSC 2005), the GOM winter flounder stock was not overfished and overfishing was not occurring.

POLLOCK

Paul Howard's letter is also correct in pointing out that the GARM III report (Table 2 on page xiv) incorrectly used the single fall survey biomass index from 2007 as a basis for making a status determination about whether the pollock stock is overfished. To be consistent with approaches used by the Plan Development Team in the past, the appropriate method for determining stock status should have been based on an average of recent fall survey biomass indices. There are several ways to compute the average based on the recent data, and different formulas for the average (lagged vs centered; latest 3-yrs vs latest 2-yrs) lead to different conclusions about whether the stock is overfished. For instance, the centered average based only on the two most recent surveys (2006 and 2007) is equal to 0.856, which indicates the stock is overfished ($B_{THRESHOLD}$ = 1 kg/tow). In contrast, the average biomass index based on the last three surveys (2005, 2006, 2007) is equal to 1.42, which indicates the stock is not overfished. This high sensitivity to the inclusion of a particular data point suggests that it is uncertain whether the stock is currently overfished.

Even though there is uncertainty about whether the stock is overfished, there are several signs in the recent fall survey indices and in the annual landings which indicate that the average biomass of the stock will decline to a level approaching an overfished condition and that the threshold will be breached within 2 years. For example, the high 2005 survey biomass index value will be dropped from the calculation of average biomass as soon as an additional year of data from 2008 becomes available. The value from 2005 was the highest in the last 25 years, and the value from 2008 is unlikely to be greater than the 25-yr maximum; so the updated 3-yr average is likely to decrease and be close to or less than $B_{THRESHOLD}$. Likewise, landings have been increasing since 1995, and the highest value in the time series (1995-2007) occurred in 2007. Thus, the relative F is likely to be much higher the next time it is calculated. Both of these factors will push the stock status calculation in the direction of being overfished and overfishing occurring.

Uncertainty exists with determining overfishing status because the 3-yr centered average cannot be fully computed without the 2008 survey biomass index. However, two calculations can be made involving the 2007 landings (2007 landings over the average biomass from 2005-2007 = 6.64 for Relative F; 2007 landings over the average biomass from 2006-2007 = 10.98 for Relative F), and both suggest that overfishing is occurring. The F_{MSY} proxy = 5.66 for Relative F.

Much of the uncertainty over which formula to use for average biomass and for Relative F is caused by not having the 2008 fall survey index yet. When it becomes available, probably in January 2009, that value could be used to compute the centered average biomass index and Relative Fishing Mortality Index for 2007 based on data from 2006, 2007, and 2008.

In summary, based on the most recent information, the pollock stock is best categorized as approaching an overfished condition and overfishing is occurring.

REFERENCES

Northeast Fisheries Science Center (NEFSC). 2005. Assessment of 19 Northeast groundfish stocks through 2004. 2005 Groundfish Assessment Review Meeting (2005 GARM). U.S. Dep. Commer., Northeast Fish. Sci. Cent. Ref. Doc. 05-13.

Northeast Fisheries Science Center (NEFSC). 2008. Assessment of 19 Northeast groundfish stocks through 2007: Report of the 3rd Groundfish Assessment Review Meeting (GARM III). U.S. Dep. Commer., Northeast Fish. Sci. Cent. Ref. Doc. 08-15.

cc: F. Almeida
F. Serchuk
J. Weinberg
P. Rago
R. Mayo
P. Nitschke

SFD-66

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

OCT 0 3 2008

Mr. Paul J. Howard, Executive Director
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Paul:

Thank you for your September 16, 2008, letter in which you highlighted important issues with respect to the results of the recent Groundfish Assessment Review Meeting (GARM III). In addition, you requested consideration of a consistent policy pertaining to when new status determination criteria become effective.

You are correct in pointing out that there are inconsistent statements in the GARM III report about whether the Gulf of Maine (GOM) winter flounder stock status can be determined. These statements resulted from the fact that this assessment was very uncertain, a point that was clearly made in the GARM III Report by both the assessment scientists and the GARM III Review Panel (Panel). Because there was so much uncertainty, the Panel had a difficult time deciding whether a status determination was possible, as reflected in their statements. Although the models did not fit well, the Panel concluded that "it is highly likely that biomass is below B_{MSY}, and that there is a substantial probability that it is below ½ B_{MSY}," and offered this input as guidance to managers. However, everyone agrees that the results are very uncertain. At this stage, it is largely a policy decision that the New England Fishery Management Council (Council) must make as to whether to use the results from the final model (as was done in the GARM III report), or to conclude that the status is unknown.

Regarding pollock, you are also correct in pointing out that the GARM III report (Table 2 on page xiv) incorrectly used the single fall survey biomass index from 2007 as a basis for making a status determination about whether the pollock stock is overfished. To be consistent with approaches used by the Plan Development Team in the past, the appropriate method for determining stock status should have been based on an average of recent fall survey biomass indices. There are several ways to compute the average based on the recent data, and different formulas for the average (lagged vs. centered; latest 3 years vs. latest 2 years) lead to different conclusions about whether the stock is overfished. For instance, the centered average based only on the two most recent surveys (2006 and 2007) is 0.856, which indicates the stock is overfished ($B_{THRESHOLD}$ = 1 kg/tow). In contrast, the average biomass index based on the last three surveys (2005, 2006, 2007) is 1.42, which indicates the stock is not overfished. This high sensitivity to the inclusion of a particular data point suggests that it is uncertain whether the stock is currently overfished.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

FEB - 6 2009

Paul J. Howard
Executive Director
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Paul:

As you are aware, a final determination regarding the status of pollock could not be made until the fall 2008 survey data were made available. In a January 28, 2009, memorandum, Dr. Nancy Thompson, Science and Research Director of the Northeast Fisheries Science Center, presented updated data concerning the status of pollock using the results of the fall 2008 survey. The memorandum concluded that the three-year centered average biomass is 0.898 kg/tow and below the 1.0 kg/tow biomass threshold. In addition, the 2007 relative fishing mortality (F), based upon the average biomass index from 2006-2008, is 10.46, nearly twice the F_{MSY} proxy of 5.65. Therefore, available data indicate that this species is overfished and subject to overfishing based upon the status determination criteria adopted under Amendment 13 to the Northeast (NE) Multispecies Fishery Management Plan (FMP).

At the December 19, 2008, Groundfish Oversight Committee (Committee) meeting, the Committee recommended that the New England Fishery Management Council (Council) include Atlantic wolffish into the management unit for the NE Multispecies FMP via Amendment 16. On January 20, 2009, a report by the Peer Review Panel for the Northeast Data Poor Stocks Working Group concluded that, based upon available information, Atlantic wolffish is currently overfished. However, the Peer Review Panel could not determine whether overfishing was occurring due to uncertainty over maturity schedule and pattern of selectivity in the fishery.

Given this new information, and pursuant to section 304(e)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), I am providing notification to the Council that, based upon the best available information, pollock is subject to overfishing and is in an overfished condition. Further, Atlantic wolffish is overfished. The Magnuson-Stevens Act requires that the Council must take action within 1 year of this notice to end overfishing and [in accordance with the National Standard Guidelines] adopt conservation and management measures to rebuild these stocks. I recommend that measures to address the condition of these stocks be implemented through Amendment 16 to the FMP, and look forward to working with you on this important matter.

Sincerely,

Patricia A. Kurkul
Regional Administrator