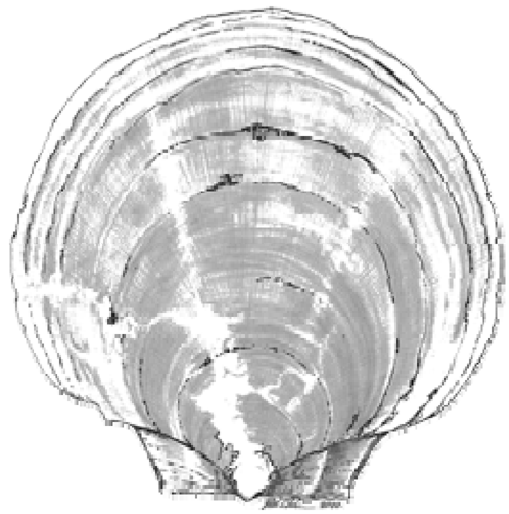

# Amendment 15

## to the Scallop Fishery Management Plan

Including a
Final Environmental Impact Statement (FEIS)

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

*Council approval of DEIS: September 24, 2009*
*Submission of DEIS: April 28, 2010*
*Final submission of DEIS: June 17, 2010*
*Council approval of FEIS: September 29, 2010*
*Submission of FEIS: December 6, 2010*

Front cover image: Drawing by Peter Christopher, NOAA NMFS, Northeast Region
Member of the Scallop Plan Development Team

## LIST OF ACRONYMS

A10 – Amendment 10 to the Atlantic Sea Scallop Fishery Management Plan
A11 – Amendment 11 to the Atlantic Sea Scallop Fishery Management Plan
A13 – Amendment 13 to the Northeast Multispecies Fishery Management Plan
A15 – Amendment 15 to the Atlantic Sea Scallop Fishery Management Plan
AA – Access Area
ABC – Acceptable Biological Catch
ACL – Annual Catch Limit
ACT – Annual Catch Target
AM – Accountability Measure(s)
AP – Advisory Panel
$B_{MSY}$ – Biomass at Maximum Sustainable Yield
BiOp, BO – Biological Opinion
CEQ – Council on Environmental Quality
CFA – Community Fishing Association
CA – Closed Area
CAI – Closed Area I
CAII – Closed Area II
CASA – Catch-At-Age Size-At-Age (model)
CPH – Confirmation of Permit History
CV – Coefficient of variation, a standard statistical measure of variation, expressed as a percentage of the mean. Lower CVs indicate more accuracy in the estimates and less variation in data.
CWA – Cape Wind Associates
DAS – Day-at-sea
DMV – Delmarva
CPUE – Catch per Unit Effort
DSEIS – Draft Supplemental Environmental Impact Statement
DEIS – Draft Environmental Impact Statement
EBFM – Ecosystem Based Fishery Management
EA – Environmental Assessment
EEZ – Exclusive Economic Zone
ESA – Endangered Species Act
EFH – Essential Fish Habitat
- EFH designation life stages
  - A – Adult life stage
  - J – Juvenile life stage
  - E – Egg life stage

ET, ETA – Elephant Trunk Area
FMP – Fishery Management Plan
FR – Federal Register
FSEIS – Final supplemental environmental impact statement
FEIS – Final Environmental Impact Statement
$F_{MSY}$ – Fishing Mortality at Maximum Sustainable Yield
FPA – Fishing Power Adjustment

FW18 – Framework Adjustment 18 to the Atlantic Sea Scallop Fishery Management Plan
FW19 – Framework Adjustment 19 to the Atlantic Sea Scallop Fishery Management Plan
FW21 – Framework Adjustment 21 to the Atlantic Sea Scallop Fishery Management Plan
FW22 – Framework Adjustment 22 to the Atlantic Sea Scallop Fishery Management Plan
FY – Fishing Year
GB – Georges Bank
GC – General Category
GOM – Gulf of Maine
GSC – Great South Channel
G(R)T – Gross (Registered) Tonnage
HAPC – Habitat Area of Particular Concern
HC(L)(S) – Hudson Canyon (Large) (Small)
HP – Horsepower
LA – Limited Access
LAGC – Limited Access General Category
LPUE – Landings per unit effort, usually a DAS in this document
IFQ – Individual Fishing Quota
IRFA – Initial Regulatory Flexibility Analysis
IVR – Interactive Voice Reporting
LA – Limited Access
LAGC – Limited Access General Category
LIPA – Long Island Power Authority
LNG – Liquefied Natural Gas
LPUE – Landings per Unit Effort
*M* – natural Mortality
MA – Mid-Atlantic
MAFMC – Mid-Atlantic Fishery Management Council
MFMT – Maximum Fishing Mortality Target
MSST – Maximum Sustainable Stock Threshold
M-S Act – Magnuson Stevens Act
MSY – Maximum Sustainable Yield
NE – New England or Northeast
NEFMC – New England Fishery Management Council
NEFSC – Northeast Fisheries Science Center
NEPA – National Environmental Policy Act
NGOM – Northern Gulf of Maine
NLSA/NL/NLA – Nantucket Lightship Area
NLCA – Nantucket Lightship Closed Area
NMFS – National Marine Fisheries Service
NOAA – National Oceanographic Atmospheric Administration
OA – Open Area
OFD – Overfishing Definition
OFL – Overfishing Limit
OY – Optimum Yield
RIR – Regulatory Impact Review
SAP – Special Access Program

SAMS – Scallop Area Management Simulator (model)
SARC – Stock Assessment Review Committee
SASI – Swept Area Seabed Impact (model)
SAW – Stock assessment workshop
SBNMS – Stellwagen Bank Marine Sanctuary
SBRM – Standardized bycatch reporting methodology
SCH – Great South Channel
SDC – Status Determination Criteria
SEIS – Supplemental Environmental Impact Statement
SH/MW – Shell Height-Meat Weight (relationship)
SMAST –School of Marine Science and Technology, University of Massachusetts Dartmouth
SNE – Southern New England
SNE/MA – Southern New England/Mid-Atlantic
SYM – Stochastic Yield Model
SSAP – Sea Scallop Advisory Panel
TAC – Total Allowable Catch. This includes discards for finfish species, but not for scallops which have a much lower discard mortality rate.
PDT – Scallop Plan Development Team
U10 – A classification for large scallops, less than 10 meats per pound.
USGS – United States Geological Survey
VEC – Valued Ecosystem Component
VIMS – Virginia Institute of Marine Science
VMS – Vessel Monitoring System
VTR – Vessel Trip Reports
WGOM – Western Gulf of Maine
WHOI – Woods Hole Oceanographic Institute
YTF/YT – Yellowtail flounder

**AMENDMENT 15 TO THE SEA SCALLOP FISHERY MANAGEMENT PLAN**

*Proposed Action:* Implementation of measures for annual catch limits (ACLs) and accountability measures (AMs) in the limited access (LA) and limited access general category (LAGC) scallop fisheries to comply with the reauthorization of the Magnuson-Stevens Act, and implementation of changes to make the FMP more effective. The proposed action includes an ACL structure and accountability measures for the scallop fishery, and for yellowtail flounder caught as bycatch in the scallop fishery. It also includes changes to the overfishing definition, general category individual fishing quota (IFQ) program, EFH closed areas, and research set-aside program. An ACL flow chart will be used which is based on the structure Overfishing Limit (OFL) > acceptable biological catch (ABC) = ACL > Annual Catch Target (ACT). ABC will be set at a level that has a 25 percent probability of exceeding the fishing mortality (F) associated with OFL. Sub-ACLs will be administered for the LA and LAGC fisheries at 94.5% and 5.5% of the overall ACL, respectively. The LA sub-ACT will then be set at an F rate with 25% probability of exceeding the LA sub-ACL to account for management uncertainty. The LAGC sub-ACT will be set equal to the LAGC sub-ACL. The limited access fishery will use an ACT as AM, with an additional AM that will reduce overall DAS in the subsequent year to account for an overage of the LA ACL. There will be a disclaimer that if overall F is re-estimated after the fishing year has ended and is more than one standard deviation below overall F for the fishery ACL, AMs for the LA fishery will not be triggered. In addition, if the limited access disclaimer is triggered, then 5.5% of the difference between the original limited access sub-ACL and the actual limited access landings will be allocated to the limited access general category IFQ fleet the next year. The poundage will be deducted directly from the following year's limited access sub-ACL and will be divided among the IFQ fleet the same way that all quota is divided now. The AM for the LAGC fishery will be on an individual basis, IFQ reductions the following year if an overage occurs. Yellowtail flounder will be managed in the scallop fishery through a non-target species sub-ACL. If the yellowtail flounder sub-ACL is exceeded, the following AM will apply: If, by January 15 of each year, the Regional Administrator determines that a yellowtail flounder sub-ACL for the scallop fishery will be exceeded, the specified statistical areas with highest YT bycatch rates will be closed to scallop fishing on March 1 and remain closed for a specified length of time depending on the percentage overage. Closures will not apply to general category trips in exempted areas. To make monitoring more effective for this AM, VMS will be expanded to include daily reports for each trip of yellowtail flounder catch and all other species landed by YT stock area. Any overages of the yellowtail sub-ACL for the scallop fishery in 2010 will also be subject to the same AM described above upon implementation of this action. The "hybrid" overfishing definition will be implemented and reference points will be changed from $F_{max}$ and $B_{max}$ to $F_{msy}$ and $B_{msy}$. In the limited access general category fishery, the possession limit will be raised to 600 lbs, a rollover of 15% of original annual allocation will be allowed if unused, the maximum quota one vessel can harvest will be increased to 2.5%, and LAGC quota can be split from a permit for LAGC IFQ vessels only, not for LA vessels with LAGC permits. EFH closed areas will be modified to be consistent with EFH areas closed under multispecies Amendment 13. A host of improvements will be made to the RSA program. Finally, specifications packages for this FMP will now include a third year to be used in the interim if the action is not implemented before the start of the fishing year. These third year specs will be superseded by the next specification package as soon as it goes into effect.

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|---|---|
| *Type of Statement:* | Final Environmental Impact Statement |
| *Responsible Agencies:* | New England Fishery Management Council<br>National Marine Fisheries Service |
| *For Further Information:* | Paul Howard, Executive Director<br>New England Fishery Management Council<br>50 Water Street, Mill #2<br>Newburyport, Massachusetts 01950<br>Phone: (978) 465-0492<br>Fax: (978) 465-3116 |

Abstract: The New England Fishery Management Council and the NOAA Assistant Administrator for Fisheries propose to implement annual catch limits (ACLs) and accountability measures (AMs) in the scallop fishery and make a host of other improvements to the Scallop FMP through Amendment 15 to the Scallop FMP, pursuant the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act). This document includes a variety of measures to address the goals and objectives of the action. The Council has identified several measures that, together, constitute the proposed action.

The primary components include: Implementing ACL structure and AMs for in the components of the fishery; implementing an acceptable biological catch (ABC) control rule; changing the essential fish habitat (EFH) closed areas to be consistent with the Northeast Multispecies FMP; making relatively minor changes to the limited access general category (LAGC) individual fishing quota (IFQ) fishery including increasing the possession limit and allowing IFQ carryover; changing the overfishing definition to be more consistent with area rotation; and revising a host of measures under the scallop research set-aside program.

This document includes all information and analyses required under the National Environmental Policy Act (NEPA), the Magnuson Act, the Regulatory Flexibility Act (RFA), and other applicable laws.

## EXECUTIVE SUMMARY

The New England Fishery Management Council and the NOAA Assistant Administrator for Fisheries propose measures in Amendment 15 to the Sea Scallop Fishery Management Plan (FMP) to bring the FMP in compliance with the reauthorization of the Magnuson-Stevens Conservation and Management Act (Magnuson Act) by implementing annual catch limits (ACLs) and accountability measures (AMs) to prevent overfishing. This action also includes several adjustments to make the overall scallop FMP more effective as an over-arching goal. To address this goal, Amendment 15 includes: Changes to the limited access general category (LAGC) fishery; adjustment of the overfishing definition; changes to essential fish habitat (EFH) closed areas (due to delays of EFH Omnibus Amendment 2); and several adjustments to the research set-aside program.

Finally, the Council considered management measures to address excess capacity in the Atlantic sea scallop (scallop) fishery and the disconnect between available data and the start of the scallop fishing year. While this action was developed to also address excess capacity in the limited access fishery through consideration of stacking permits and leasing of fishery allocations, the Council determined that current measures are sufficient to address excess capacity. The Council also determined that a change of the fishing year to address the disconnect between available data and the start of the scallop fishing year was not necessary.

This amendment document and final environmental impact statement (FEIS) presents and evaluates management measures and alternatives to achieve specific goals and objectives for the scallop fishery. This document was prepared by the New England Fishery Management Council and its Scallop Plan Development Team (PDT), in consultation with the National Marine Fisheries Service (NMFS, NOAA Fisheries) and the Mid-Atlantic Fishery Management Council (MAFMC). This amendment was developed in accordance with the Magnuson Act (MSFCMA, M-S Act) and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ). This document also addresses the requirements of other applicable laws (See Section 6.0).

Section 1.0 of the Amendment 15 FEIS includes a summary of background information and describes the purpose of this action. Section 2.0 of the FEIS defines the goals and objectives of Amendment 15 and Section 3.0 of the FEIS describes the proposed action and all other alternatives considered. Section 4.0 of the FEIS is a description of the affected environment including a summary of the status of the scallop resource, EFH, protected resources in this region, fishery-related businesses and communities, other fisheries and non-target species. Section 5.0 of the FEIS describes the expected impacts of the Amendment 15 alternatives on the various components of the affected environment. Lastly, Sections 6.0 through Section 9.0 of the Amendment 15 FEIS include a description of the required provisions of federal laws that this action is subject to.

In September 2010, the Council made final decisions on the measures in Amendment 15. Table 2 is a summary of all the alternatives considered, and the alternatives chosen under final action are shaded and bold. The Council adopted the following ACL structure: The overfishing limit

(OFL) is greater than ABC; ABC is equal to overall ACL; and overall ACL is greater than annual catch target (ACT) (represented as OFL > ABC = ACL > ACT). To account for scientific uncertainty, the Council adopted an ABC that is less than OFL and has an associated fishing mortality that has a 25 percent probability of exceeding the fishing mortality associated with OFL (i.e., a 75 percent probability of being below the OFL F-rate). The Council also adopted separate ACLs for the limited access (LA) and LAGC fisheries and chose a management buffer appropriate for each fishery (ACT set at a 25% chance of exceeding ACL for LA, and 0% for LAGC). The use of an ACT is the primary AM for both LA and LAGC, with adjustments to future allocations to be made to each respective fishery if overages occur. Yellowtail flounder caught in the scallop fishery are subject to a non-target ACL in the Scallop FMP (a sub-ACL in the NE Multispecies FMP). An AM for the fleet would close areas of the fishing grounds subject to high yellowtail bycatch for a specified period of time if the sub-ACL is exceeded. Because the area for the Southern New England/Mid-Atlantic spans a large amount of the LAGC fishing grounds in that area and bycatch by the fleet is low since the fleet is only allocated 5.5% of the projected scallop catch, the LAGC was exempted from this AM in areas where they are allowed to fish under NE Multispecies FMP exempted fisheries.

Though originally selected as preferred, both stacking and leasing alternatives were not chosen during final action for measures to address excess capacity in the limited access scallop fishery. A large majority of public opinion was against inclusion of these alternatives based on potential loss of jobs on the waterfront that would have trickle-down impacts on other fisheries and communities, potential negative impacts on future fishing opportunities for vessels that do not stack or lease, potential negative impacts on other fisheries if scallop vessels redirect effort after leasing out scallop effort, and unintended consequences of additional consolidation in the scallop fishery.

The Council adopted changes to the EFH closed areas so that they are consistent with EFH areas closed under NE Multispecies Amendment 13 (see Figure 5). This alternative was chosen to create more consistency between management plans and allow greater access to areas with high concentration of the scallop resource as originally intended in Amendment 10 to the Scallop FMP and Framework 16/39 to the Scallop/NE Multispecies FMPs. The change in Amendment 15 would allow such measures to be consistent in the interim before action on the EFH Omnibus Amendment 2 is completed to address impacts on EFH across all New England FMPs.

A number of changes were made to the LAGC IFQ program as fully implemented in 2010 under Amendment 11. First, a rollover of 15% of the permit holder's original annual allocation will be allowed to a subsequent fishing year to increase flexibility and provide a safety mechanism in the case of a late-season breakdown. Second, the possession limit will be increased from 400 to 600 pounds to allow for more efficient harvest of quota, without the increase being large enough to change the nature of this small day-boat fishery and creating competition between the fleets. Third, the maximum amount of quota one vessel can harvest was increased from 2% to 2.5% to be more consistent with the maximum individual ownership value of 5%. Finally, IFQ vessels will be allowed to split the IFQ from their IFQ permit and other fishery permits to facilitate permanent IFQ transfers from vessels with a suite of NE fishery permits. This provision will only apply to LAGC IFQ permit holders that do not also have a LA scallop permit to prevent crossover of LAGC fishery allocations between the two LAGC permit types (which would have caused significant monitoring difficulties if allowed). An alternative to implement community fishing associations was not chosen due to incomplete development, but the Council noted that this should be a priority for future consideration.

The overfishing definition will be modified under Alternative 3.4.1.3 to be more consistent with rotational area management. The "hybrid" approach chosen combines the overfishing threshold (formerly $F_{max}$, now $F_{msy}$) from the status quo overfishing definition with a fishing mortality target that separates open from access areas. The $F_{target}$ for open areas would be constant, and the $F_{target}$ in access areas would be allowed to fluctuate with time. The Council also accepted the change of reference points from $F_{max}$ and $B_{max}$ to $F_{msy}$ and $B_{msy}$ recommended by the 50th Stock Assessment Workshop (SAW 50).

A suite of changes were made to the research set-aside program to improve its timeliness and effectiveness. Upon implementation, the RSA program will be made multi-year, meaning it would be more in line with the specifications process and research projects and TACs could span two years if proposed as such. The RSA set-aside allocation for both open area DAS and access area trips will be changed from a percentage to a set poundage, until changed under the framework adjustment process. The Council supported increasing the set-aside amount, initially set at 1.25 million pounds, but decided not to support the subdivision of RSA funding by topic. Rollover of unused RSA TAC will be used for awarded projects that apply for compensation based on an incorrect estimation of price-per-pound in the FFO. A grace period during the first quarter of the following fishing year will be implemented as an extension for harvesting compensation awarded RSA TAC if needed. The Council supported increasing public input of the RSA process through increased involvement of the advisory panel in setting research priorities and participating on management review panels if not involved in proposals. Finally, three measures were identified from which RSA projects could be exempt if identified in the proposal. These are crew restrictions, seasonal closures of access areas in the Mid-Atlantic to reduce impacts on sea turtles, and the requirement to return to port if fishing in more than one area.

Lastly, the Council made changes to list of frameworkable items, adding the following: The general category possession limit; all aspects of ACL management including AMs; adjustments to EFH boundaries; and the amount of the research set-aside poundage.

The Amendment 15 DEIS was available for public comment beginning July 9, 2010, and a series of six public hearings were held in July, 2010. More than 150 people attended these meetings and the comments of 62 speakers were reported. In addition, over 60 individual written comments were received, including two "form letters," one signed by more than 130 individuals. A summary of all public comment can be found in Section 6.2 of the FEIS, written comments are included in Appendix IV, and a summary of oral comments from the six public hearings is included in Appendix V. The Council's Scallop Oversight Committee (Scallop Committee) and Council reviewed these comments before making final decisions at the Council meeting in Newport, Rhode Island on September 29 and 30, 2010.

Analyses of the selected alternatives, as well as all management alternatives considered during the development of this amendment are provided in this document across a series of valued ecosystem components, or VECs. VECs represent the resources, areas, and human communities that may be affected by a proposed management action or alternatives, and by other actions that have occurred or will occur outside the Proposed Action. VECs are the focus of an EIS since they are the "place" where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside the Proposed Action (i.e., cumulative effects). The VECs identified for Amendment 15 include: Atlantic sea scallop resource, physical environment and EFH, protected species, fishery-related businesses and communities, other fisheries, and non-target species.

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment section (Section 4.0) of this document traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the readers' understanding of the historical, current, and near-future conditions (baselines and trends) in order to fully understand the anticipated environmental impacts of the management alternatives under consideration in this amendment, which are described in Section 5.0. Overall, the cumulative effects of the proposed action on the scallop resource, EFH, protected resources, fishery businesses and communities, other fisheries and non-target species of the alternatives under consideration are expected to be neutral to potentially positive.

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# 1.0 BACKGROUND AND PURPOSE

## 1.1 SUMMARY OF PAST MANAGEMENT ACTIONS

The Atlantic Sea Scallop FMP management unit consists of the sea scallop *Placopecten magellanicus* (Gmelin) resource throughout its range in waters under the jurisdiction of the United States. This includes all populations of sea scallops from the shoreline to the outer boundary of the Exclusive Economic Zone (EEZ). While fishing for sea scallops within state waters is not subject to regulation under the FMP except for vessels that hold a federal permit when fishing in state waters, the scallops in state waters are included in the overall management unit. The principal resource areas are the Northeast Peak of Georges Bank, westward to the Great South Channel, and southward along the continental shelf of the Mid-Atlantic.

The Council established the Scallop FMP in 1982. A number of Amendments and Framework Adjustments have been implemented since that time to adjust the original plan. Amendment 4 was implemented in 1994 and introduced major changes in scallop management, including a limited access program to stop the influx of new vessels, a day-at-sea (DAS) reduction plan to reduce mortality and prevent recruitment overfishing, new gear regulations to improve size selection and reduce bycatch, a vessel monitoring system to track a vessel's fishing effort, and an annual framework adjustment process to allow certain measures to be modified in response to changes in the fishery including scallop abundance. Limited access vessels were assigned different DAS limits according to which permit category they qualified for: full-time, part-time or occasional. Amendment 4 established a planned reduction in the annual day-at-sea allocations for vessels with limited access scallop permits. Amendment 4 also created the general category scallop permit for vessels that did not qualify for a limited access permit. Although originally created for an incidental catch of scallops in other fisheries, and for small-scale directed fisheries, the general category fishery and fleet has evolved since its creation in 1994.

Also in 1994, Amendment 5 to the Northeast Multispecies FMP closed Closed Area I, Closed Area II, and the Nantucket Lightship Area to scallop fishing, because of concerns over finfish bycatch and disruption of spawning aggregations.

In 1998, the Council developed Amendment 7 to the Scallop FMP, which was needed to change the overfishing definition, the day-at-sea schedule, and measures to meet new lower mortality targets to comply with new requirement under the Magnuson-Stevens Act. In addition, Amendment 7 established two new scallop closed areas (Hudson Canyon and VA/NC Areas) in the Mid-Atlantic to protect concentrations of small scallops until they reached a larger size. Amendment 7 further reduced the DAS allocations under a 10-year 'rebuilding' period. Framework Adjustments 12, 14 and 15 to the Scallop FMP later adjusted the DAS allocations upward to meet the Amendment 7 fishing mortality targets.

In 1999, Framework Adjustment 11 to the Scallop FMP allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. Scallop resource surveys and experimental fishing activities had identified areas where scallop biomass was very high due to no fishing in the intervening years. These surveys and experimental fisheries provided more precise estimates of total biomass as well as the distribution and amount of finfish bycatch and allowed the Council to open the southern part of Closed Area II.

In 2000, Framework Adjustment 13 to the Scallop FMP authorized full-time and part-time limited access vessels to take three trips in the southern part of Closed Area II during June 15 to August 14, 2000; one trip in the northeast corner of the Nantucket Lightship Area during August 15 to September 30, 2000; and two trips in the central part of Closed Area I from October 1, 2000 to January 31, 2001.

In 2001, Framework Adjustment 14 to the Scallop FMP implemented a new area access program to the Hudson Canyon and VA/NC Areas since scallop biomass had rapidly increased due to the enhanced survival of the strong 1997 and 1998 year classes, especially in the Hudson Canyon Area. Following the structure of the highly successful area access program for the Georges Bank closed areas in 2000; the framework adjustment allocated trips to limited access vessels and applied a scallop possession limit and a day-at-sea tradeoff. Unlike the Georges Bank closed area access program, however, Framework Adjustment 14 allowed vessels with general category scallop permits to land 100 pounds of scallop meats from the Hudson Canyon and VA/NC Areas.

Framework Adjustment 15 (2003) to the Scallop FMP continued the measures implemented in Framework Adjustment 14, but increased the Hudson Canyon and VA/NC Area scallop possession limit from 18,000 to 21,000 pounds per trip. This action was needed to achieve the objectives and fishing mortality target specified in Amendment 7, while the Council developed Amendment 10.

In 2004, Amendment 10 to the Scallop FMP introduced rotation area management and changed the way that the FMP allocates fishing effort for limited access scallop vessels. Instead of allocating an annual pool of DAS for limited vessels to fish in any area, vessels had to use a portion of their total DAS allocation in the controlled access areas defined by the plan, or exchange them with another vessel to fish in a different controlled access area. Vessels could fish their open area DAS in any area that was not designated a controlled access area. The amendment also adopted several alternatives to minimize impacts on EFH, including designating EFH closed areas, which included portions of the groundfish mortality closed areas.

Framework 16 to the Scallop FMP, implemented in November 2004, adjusted DAS allocations and defined the area rotation schedule for part of the 2004 fishing year and the 2005 fishing year. It also included: a) an access program for vessels with general category scallop permits with enhanced reporting requirements and a 2% TAC set-aside; b) yellowtail flounder TACs and provisions to minimize bycatch; c) changes in finfish possession limits to minimize bycatch and bycatch mortality; d) seasons when scallop fishing would be allowed to minimize bycatch and bycatch mortality; e) enhanced sea sampling (through observers) to improve precision of bycatch estimates; f) provisions to enhance enforcement monitoring and compliance; and g) a dredge-only restriction for fishing in the access areas to minimize bycatch and bycatch mortality.

Framework 16 also attempted to make the habitat closed area boundaries implemented under Amendment 10 consistent with the areas later implemented under Amendment 13 to the Northeast Multispecies FMP. However, in August 2005, the Court, in Oceana v. Evans, ruled that any revisions to the boundaries under the Scallop FMP must be implemented under a full rule making process via an FMP amendment rather than through the abbreviated rule-making process used in a framework adjustment, and reinstated the EFH closed areas implemented under Amendment 10 to the Scallop FMP. Thus, the habitat closed area boundaries implemented under

Amendment 10 are currently in effect. As a result, the remaining areas accessible to scallop vessels under the rotational area management program are substantially smaller in Closed Area I and the Nantucket Lightship Closed Area than anticipated until the court ruling.

Framework 17 to the Scallop FMP was implemented in the fall of 2005. The purpose of the action was to provide more complete monitoring of the general category scallop fleet by requiring that vessels landing more than 40 pounds of scallop meats use monitoring systems (VMS). It revised the broken trip adjustment provision for limited access scallop vessels fishing in the Sea Scallop Area Access Program, by eliminating the broken trip "penalty," which may have had a negative influence on vessel operator decisions and safety at sea.

Framework 18 was implemented on June 15, 2006, which set management measures for fishing years 2006 and 2007. Limited access vessels were allocated a specific number of open area DAS for each fishing year, as well as a maximum number of trips for different access areas depending on their permit category. Specifically, Closed Area II and Nantucket Lightship were open in 2006 under restricted access, and Nantucket Lightship and Closed Area I are open in 2007. General category vessels are also permitted to fish in these access areas with a 400 pound possession limit up to a total number of trips for that component of the fleet. Both areas are subject to a bycatch TAC of yellowtail flounder; when that bycatch TAC is projected to be caught, the area closes to all scallop fishing. The Elephant Trunk area also opens as a result of this action with specific allocation of trips, opening dates, and seasonal closures to reduce potential interactions with sea turtles. An area called Delmarva was closed under this action to protect small scallops found in that area; the area is projected to open in 2010. Other measures were included in the action such as measures related to unused 2005 Hudson Canyon trips, transfer of access area trips to open areas if access areas close early if the YT bycatch TAC is attained, elimination of crew size restrictions in access areas, access area trips exchange program changes, broken trip program changes, and allocations for set-aside programs (1% for observer program and 2% for research).

In June 2007 the Council approved Amendment 11 to the Scallop FMP and it was effective on June 1, 2008. The main objective of the action was to control capacity and mortality in the general category scallop fishery. Since 1999, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices. This additional effort is likely a contributing factor to why the FMP has been exceeding the fishing mortality targets. Without additional controls on the general category fishery, there is a great deal of uncertainty with respect to potential fishing mortality from this component of the scallop fishery; thus, the potential for overfishing is increased.

Amendment 11 implemented a limited entry program for the general category fishery. Each qualifying vessel will receive an individual allocation in pounds of scallop meat with a possession limit of 400 pounds. Qualifying vessels will receive a total allocation of 5% of the total projected scallop catch. There is also a separate limited entry program for general category fishing in the Northern Gulf of Maine. In addition, Amendment 11 includes adjustments to the limited access scallop fleet fishing under general category rules. Another separate limited entry program for that fleet was adopted with the same qualification criteria as the limited entry general category permit. Qualifying vessels will also receive an individual allocation in pounds, and the entire category will receive 0.5% of the total projected scallop catch. In addition, a separate limited entry incidental catch permit was adopted that will permit vessels to land and sell up to 40 pounds of scallop meat per trip while fishing for other species. Other measures were included under Amendment 11 as well.

The Council approved Amendment 12 to the Scallop FMP in June 2007. This action is an omnibus amendment to all FMPs in the region and focuses on defining a standardized bycatch reporting methodology (SBRM). Section 303(a) (11) of the Magnuson-Stevens Fishery Conservation and Management Act requires that all FMPs include "a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery." The SBRM Omnibus Amendment will ensure that all FMPs fully comply with the act. Amendment 10 and Framework 16 to the Scallop FMP were submitted to NMFS several years ago, and in 2004 Oceana, an environmental organization, filed suit in the U.S. District Court challenging the SBRM elements of the FMP. The Court found the actions did not fully evaluate reporting methodologies, did not sufficiently address potentially important scientific evidence, and did not mandate a methodology for bycatch monitoring. Therefore, the Court remanded that the Secretary of Commerce take further action on the SBRM aspects of the Scallop FMP. SBRM is the combination of sampling design, data collection procedures, and analyses used to estimate bycatch and to determine the most appropriate allocation of observers across the relevant fishery modes. The Council worked with NMFS in development of the SBRM Omnibus Amendment since 2005 and final measures were selected in June 2007. Amendment 12 was implemented on February 27, 2008.

Scallop Amendment 13 was also approved by both the Council and NMFS in 2007, which re-activated the industry-funded observer program. Since 1999, vessels required to carry an observer are authorized to land more than the possession limit from trips in access areas, and in open areas, vessels are charged a reduced amount to help compensate for the cost of an observer. Observers were deployed through a contractual arrangement between National Marine Fisheries Service (NMFS) and an observer provider until June 2004. This arrangement was not renewed because of unresolved legal issues concerning the use of a contract to administer the industry-funded observer program. For some time, NMFS funded observers while a solution to this issue was investigated. As funding became insufficient, an interim rule went into effect that approved a new mechanism to use the observer set-aside funds through a non-contracted vendor. Amendment 13 was necessary to make this temporary mechanism part of the regulations. The Council selected final measures for that action at the February 2007 Council meeting and it was implemented on June 12, 2007. Amendment 13 also includes a provision to make changes to the observer set-aside program by framework action and the Council decided to address some issues raised with the current program in this framework action.

The Council initiated Phase 1 of the Essential Fish Habitat Omnibus Amendment in 2004. The primary purpose of Phase 1 is to review EFH designations, consider HAPC alternatives, describe prey species, and evaluate non-fishing impacts. This action is an amendment to all FMPs in this region, and is Amendment 14 to the Scallop FMP. The Council approved the DEIS for Phase 1 at the February 2007 Council meeting, which then was submitted to NMFS in March 2007. The Council made final decisions on Phase 1 topics at their June 2007 meeting. Phase 2 of the EFH Amendment will begin in September 2007 and will consider the effects of fishing gear on EFH and move to minimize, mitigate or avoid those impacts that are more than minimal and temporary in nature. Phase 2 will also reconsider measures in place to protect EFH in the

Northeast region. The entire Amendment (Phase 1 and Phase 2) is expected to be completed and implemented in 2010.

The Council also approved Framework 20 to the Scallop FMP at the June 2007 Council meeting and NMFS implemented that action in December 2007. Framework 20 considered measures to reduce overfishing for FY2007 through measures that were implemented by interim action earlier that year. At the November 2006 Council meeting, the Scallop PDT informed the Council that overfishing was likely to occur in 2007 under status quo measures implemented under Framework 18. The PDT presented several alternatives to reduce fishing mortality. The Council ultimately recommended that NMFS reduce the allocated number of trips for all scallop permit categories in the Elephant Trunk Access Area (ETA), delay the opening of the ETA, and prohibit vessels from possessing more than 50 bushels of in-shell scallops when leaving any controlled access area. NMFS agreed with the Council that the ETA has an unprecedented high abundance of scallops, which needs to be husbanded with precaution to effectively preserve the long term health of the scallop resource and fishery, and so implemented these measures by interim action.[1] This interim action became effective on December 22, 2006, and remained in effect until June 20, 2007 (180 days). This interim action was extended for an additional 180 days, but expired on December 26, 2007. Therefore, for the last two months of the 2007 fishing year (January-February 2008), management would revert back to status quo measures under FW18. Specifically, higher trip allocations would be granted in the Elephant Trunk Area for both limited access and general category fisheries. Therefore, the Council approved Framework 20 to extend the reduced fishing effort measures implemented by interim action through the end of the 2007 fishing year.

Measures for fishing year 2008 and 2009 were approved in Framework 19. Framework 19 included the fishery specifications for these two fishing years including the access area schedule, DAS allocations and general category measures. The general category fishery is still under transition to an IFQ program, so is allocated 10% of the total projected catch, until the IFQ program is fully implemented. Until that time the fishery is managed under quarterly hard TACs. The limited access fishery was allocated a series of access area trips and DAS allocations to achieve an overall F of 0.20, the previous fishing mortality target. A new rotational area was closed to all scallop fishing (Hudson Canyon area) to protect small scallops. Other measures related to access area fishing were adopted including the continuation of eliminating the crew size restriction on access area trips and prohibiting all scallop vessels from "deckloading", and prohibition from leaving an access area with more than 50 bushels of in-shell scallop onboard.

Framework 21 was submitted in March, 2010, and will become effective in summer 2010. FW21 includes:

- An acceptable biological catch (ABC) as required by the reauthorized Magnuson Act (2007),
- Total allowable catch (TAC) specifications for the 2010 fishing year, DAS allocations, and access area schedule based on a target fishing mortality of $F = 0.24$ with no new closure in the Great South Channel on Georges Bank,

[1] The interim rule published by NMFS on December 22, 2006 (**71 FR 76945**), included all measures recommended by the Council, except the prohibition on a vessel leaving an access area with more than 50 bu. of in-shell scallop was limited to the ETA only and not all access areas as recommended by the Council.

- A provision to allow limited access general category (LAGC) vessels with individual fishing quota (IFQ) permits to lease a portion of their IFQ to other IFQ-permitted vessels,
- Provisions to minimize impacts of incidental take of sea turtles as per the March 14, 2008 Atlantic Sea Scallop FMP Biological Opinion, and
- A measure to improve the observer set-aside program.

## 1.2 PURPOSE AND NEED

The primary need for this action is to bring the Scallop FMP in compliance with the re-authorized Magnuson-Stevens Conservation and Management Act (MSA). The Act was reauthorized in 2007 and included several new legal requirements. Foremost, the Act requires that each fishery use annual catch limits (ACLs) to prevent overfishing, including measures to ensure accountability. The Scallop FMP is required to be compliant with these new regulations by 2011 since the stock is not subject to overfishing. Therefore, the primary purpose of this amendment is to consider measures that will implement annual catch limits and accountability measures (AMs) to prevent overfishing.

The secondary need for this action is to address excess capacity in the limited access (LA) scallop fishery and provide more flexibility for efficient utilization of the resource. The secondary purpose of this amendment is to consider measures that address capacity in the limited access scallop fishery and improve overall economic performance while considering impacts on various fisheries and fishing communities. Measures to improve the economic efficiency of the limited access fishery, an objective of National Standard 5, will also take into account the importance of fishery resources to fishing communities to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities (National Standard 8). This action will also include measures to minimize costs and unnecessary duplication (National Standard 7).

The third need for this action is to adjust several aspects of the overall program to make the scallop management plan more effective. This action will include five distinct purposes related to this third overall management need. The first purpose is to consider measures that will adjust the current overfishing definition (OFD) to be more compatible with area rotation. Specifically, the new overfishing definition would average fishing mortality over time and not space; meaning area-specific thresholds would be set based on past fishing mortality rates and area rotation policies. The second purpose is to consider minor adjustments to the recently-implemented limited access general category management program. The specific topics being considered for this second purpose regarding the general category program adjustments are: an allowance of IFQ rollover; allocation of area-specific IFQ; modifications to the general category possession limit; implementation of community fishing associations (CFAs) in the LAGC scallop fishery; and adjusting the restriction on maximum quota per fishing platform from 2% to 2.5% of the total general category allocation.

The third purpose related to the third need of Amendment 15 is to consider measures to address the essential fish habitat (EFH) closed areas under the Scallop FMP if Phase II of the EFH Amendment is delayed. Specifically, this action would consider making the EFH closed areas consistent under both the Scallop and Groundfish FMP for scallop vessels if Phase II of the EFH Omnibus Amendment is delayed. A fourth purpose to make the overall program more effective would be to consider adjustments to the current research set-aside (RSA) program. A range of options are being considered to address timing concerns and efficient use of resource for the RSA program. The last purpose this action will consider is measures to change the scallop fishing year because it is currently out of sync with the framework adjustment process and the timing of when scallop survey data are available for management decisions. Amendment 15 is considering changing the start of the fishing year from March 1 to May 1.

Table 1 is a summary of the three needs for this action and the handful of purposes associated with those overall management needs.

**Table 1 – Summary of purposes and needs identified for Amendment 15**

| Need | Purpose | Description | Section |
|---|---|---|---|
| I – Compliance with MSA 2007 | 1 - Consider measures that will implement ACLs and AMs to prevent overfishing | This section will include alternatives that identify various fisheries in this FMP and relevant ACLs and AMs | 3.2 |
| II - Address excess capacity in the LA scallop fishery | 1 – Consider addressing capacity in the LA fishery and improve overall economic performance | This section will consider alternatives to address capacity including permit stacking, leasing, IFQs, and adjustments to the RMA program. | **3.3** |
| III - Adjust several aspects of the overall program to make the Scallop FMP more effective | 1 – Consider adjusting the current OFD to be more compatible with area rotation | This section will consider changes to the OFD so that fishing mortality is averaged over time and not space. | **3.4.1** |
| | 2 – Consider adjustments to the limited access general category management program | This section will consider an alternative for IFQ rollover, IFQ allocation by area, a GC sector application, modifications to the GC possession limit and an adjustment to the maximum IFQ per GC vessel restriction. | **0** |
| | 3 – Consider addressing the essential fish habitat (EFH) closed areas under the Scallop FMP if Phase II of the EFH Amendment is delayed | This section will consider only one alternative – make the EFH closed areas consistent under both the Scallop and Groundfish FMP for scallop vessels | **3.4.3** |
| | 4 – Consider adjustments to the current (RSA) program | This section will consider a range of options designed to address timing concerns and other aspects of the RSA program | **0** |
| | 5 – Consider adjusting the scallop fishing year | This section will consider changing the scallop FY from March 1 to May 1 | **3.4.5** |

## 1.3 NOTICE OF INTENT AND SCOPING

The New England Fishery Management Council published a Notice of Intent (NOI) to announce its intent to develop Amendment 15 and prepare an EIS to analyze the impacts of the proposed management alternatives on March 5, 2008. The purpose of the NOI was to alert the interested public of the re-commencement of the scoping process and to provide for public participation in compliance with environmental documentation requirements.

The Magnuson-Stevens Act provides a mechanism for identifying and evaluating environmental issues associated with Federal actions and for considering a reasonable range of alternatives to avoid or minimize adverse impacts to the extent practicable. The scoping process is the first and best opportunity for the public to raise issues and concerns for the Council to consider during the development of the amendment. The Council relies on input during scoping to both identify management measures and develop alternatives that meet the objectives of the Scallop FMP.

The Council approved a scoping document at the February 2008 Council meeting. The scoping document was available for the public to use during the scoping period (www.nefmc.org) and was provided at scoping hearings. Four scoping hearings were held in April 2008 in Virginia, New Jersey, Maine and Massachusetts. Notice of the scoping hearings was mailed to over 500 individuals and was solicited on the Council website as well as regional industry publications. About 25 written comments were submitted during the scoping period which ended on April 4, 2008. Comments received during scoping were considered carefully by the Council when developing the management alternatives under consideration in this amendment. Appendix I includes copies of all the written scoping comments received.

# 2.0 GOALS AND OBJECTIVES

There are three goals of this action: 1) bring the Scallop FMP in compliance with new requirements of the re-authorized MSA; 2) address excess capacity in the limited access (LA) scallop fishery; and 3) consider measures to adjust several aspects of the overall program to make the scallop management plan more effective.

In order to address these three goals, the Council has developed specific objectives to aid in the identification of a range of alternatives. Seven objectives have been identified:

1. Identify and implement appropriate ACLs and AMs for various components of the scallop fishery.
2. Consider addressing capacity in the limited access scallop fishery and improve overall economic performance while considering impacts on various fisheries and fishing communities.
3. Consider adjusting the current overfishing definition (OFD) to be more compatible with area rotation.
4. Consider adjustments to the limited access general category management program.
5. Consider addressing the essential fish habitat (EFH) closed areas under the Scallop FMP if Phase II of the EFH Amendment is delayed.
6. Consider adjustments to the current research set-aside (RSA) program to address timing concerns and efficient use of resource for the purposes of research.
7. Consider adjusting the scallop fishing year because it is currently out of sync with the framework adjustment process and the timing of when scallop survey data are available for management decisions.

# 3.0 MANAGEMENT ALTERNATIVES UNDER CONSIDERATION

Table 2 lists all the alternatives considered in this action and highlights the proposed alternatives in bold, shaded, outline. There are dozens of alternatives and options related to the three overall goals and seven objectives of this action. The following summary of the proposed action gives the alternatives chosen by the Council at the November meeting along with rationale for selection. The remainder of the section lists the description of all alternatives, with selected alternatives noted by "(PROPOSED ACTION)."

**Summary of the proposed action**

- Definition and integration of new terms (Section 3.2.1)

Pursuant to the reauthorization of Magnuson-Stevens, a new set of terms will be integrated into the Sea Scallop FMP. This was considered an "automatic" alternative and did not require Council deliberation. The list of new terms are related to Annual Catch Limit (ACL) management, and includes overfishing limit (OFL), Acceptable Biological Catch (ABC), and Annual Catch Target (ACT), among others.

- ACL structure (Section 3.2.3.2-3.2.3.8)

The Council agreed to the OFL/ACL/ACT/ABC structure along with the proposed sub-ACLs, ACTs, structural flowchart, and related methods to account for discards, incidental catch, Northern Gulf of Maine catch, state waters catch and other sources of mortality, as developed by the PDT and Committee. ABC will be set at a level that has an associated fishing mortality rate with a 25 percent probability of exceeding the F associated with OFL. This buffer accounts for scientific uncertainty associated with various parameters of the scallop resource assessments. Overall fishery ACL will be set equal to ABC, but the overall ACL will be divided into two sub-ACLs: One for the limited access (LA) scallop fishery and one for the limited access general category (LAGC) individual fishing quota (IFQ) scallop fishery. Each sub-ACL will have an ACT.

*Rationale:* The ACL structure, along with AMs in the form of ACT and measures if needed, establish catch levels that will prevent overfishing and will achieve optimum yield on a continuing basis. It accounts for all sources of catch in the scallop fishery. ABC and ACT are set below OFL and ACL, respectively, to account for scientific and management uncertainty in scallop resource assessments and in the fishery. This structure is consistent with the Magnuson-Stevens Act National Standard Guidelines for compliance with the reauthorized Magnuson-Stevens Act.

- ACT set below sub-ACLs for LA and LAGC fleets

- For the limited access fishery, the LA ACT will be set at an *F* rate with 25% probability of exceeding the total ACL = ABC. (Section 3.2.3.8.1)

Under the proposed action, similar to how ABC is set at *F* rate with 25% probability of exceeding the OFL, this buffer would be based on identifying the *F* rate with 25% probability of exceeding ABC to set the LA ACT.

*Rationale*: This method was endorsed by the PDT because it incorporates the sources of management uncertainty identified in the document, and provides a reasonable buffer based on this uncertainty that will not have undue impacts on the fishery while protecting the resource from overfishing.

For the general category fishery, the LAGC ACT will be established as equal to the LAGC ACL with no buffer. Although Amendment 15 provides the ability to set the ACT at a level lower than the LAGC ACL, initially there will be 0% reduction for management uncertainty in the LAGC fishery. *Rationale:* This is a fishery that is managed by ITQ and as such has a very high certainty of managing catch and thus is it appropriate to set ACT = ACL with no buffer for management uncertainty. Whereas the ACT for the LA fleet serves as an AM based on management uncertainty, the AM for the LAGC IFQ fleet will require individual payback for any overages, and it would not be the burden of the fleet.

- Accountability Measures (Section 3.2.3.9)

Limited Access AMs will consist of the use of an ACT as described above, and an overall DAS reduction in the subsequent year to account for any overages. A disclaimer for when LA AM would not be triggered even if LA sub-ACL exceeded will be included. The ACT will be set as described above, and if there is an overage, the DAS reduction will be determined based on the poundage of the overage divided by estimated catch per day for the fleet. However, if overall *F* is re-estimated after the fishing year has ended and is more than one standard deviation below overall *F* for the fishery-wide ACL (i.e., not the LA sub-ACL), AMs for the limited access fishery would not be triggered.

*Rationale:* This proposed action includes a preventative AM in terms of an ACT, and a payback that is consistent with the Magnuson-Stevens Act National Standard Guidelines. As for the disclaimer, if the overage in the LA fishery catch does not create a risk of overfishing, with updated estimates of fishery-wide F being lower than what was projected, there is no justification for a payback since biomass was likely higher than originally projected.

General Category AMs will consist of the use of an ACT and a reduction in IFQ the following year if an individual vessel exceeds their IFQ or leased IFQ in a given fishing year. (Section 3.2.3.9.2)If an individual exceeds their IFQ in excess of their allocation the following year, any outstanding overage would carry over to future fishing years. An individual is subject to any AMs that may be associated with leased quota.

*Rationale*: The proposed action includes a preventative AM in terms of an ACT, but currently the buffer is set at 0%. This is an IFQ fishery and individual vessels that have overages will have a deduction of the vessel's IFQ equivalent to the overage in the following year. The reactive AM, or payback AM in this case, is on an individual basis and is consistent with the National Standard Guidelines.

If the LA AM disclaimer is triggered, 5.5% of the difference between the exceeded LA sub-ACL and the actual LA landings will be allocated to the LAGC fleet the following fishing year. This poundage will be directly deducted from the following year's LA sub-ACL and will be divided among the IFQ fleet. Amendment 11 approved that the LAGC fishery should receive 5.5% of projected catch, and this measure will further that concept so that the LAGC fishery is allocated closer to 5.5% of the actual catch in the event that the LA fishery catches more than projected because projections underestimated catch for a particular fishing mortality rate.

*Rationale*: The disclaimer provision for the limited access fishery would, in effect, allow only that portion of the fishery to go over its ACL in the event that biomass was underestimated. This provision will, in effect, replace some of the allocation the LAGC would have received had the projection been closer to realized catch (more biomass provided more catch under the same F). It was argued that having a disclaimer for only one portion of the fleet impacted fishing opportunities for the LAGC fleet, and that was unfair. Since the LAGC fishery is managed under a quota, that catch is an absolute limit, no matter if fishing mortality ends up being higher or lower than projected. On the other hand, under DAS management, the LA fishery is limited to what biomass levels are in open areas because DAS management limits the time a vessel can spend fishing. So if there is more biomass than projected, vessels will catch more pounds of scallops in less time. And if biomass is overestimated, vessels will catch less per DAS than projected. In recent years projected catch has been underestimated, and is some cases by a substantial amount. If fishing mortality is higher as well from higher landings than AMs will trigger, but if F is lower than estimated even with higher landings, AMs will not trigger as a result of the disclaimer. The Council believes that expanding this disclaimer to include the LAGC fishery is necessary to bring allocated catch and realized catch percentages closer to what was intended. Since catch to the LAGC fishery from this disclaimer would be removed from the LA sub-ACL the subsequent year, there are no impacts on the resource.

The NGOM fishery has an in-season AM in the form of a hard-TAC.
The action proposes if this component of the fishery exceeds the overall hard-TAC (equal to the NGOM ACL) after all data is final, then the hard TAC the following year could be reduced by that amount the following fishing year, or by mid season the following fishing year if data are not available (i.e. reduction on June 1 if necessary). *Rationale*: The proposed action includes a payback that is consistent with the national guidelines.

The YT flounder AM for the YT sub-ACL includes seasonal closure of a portion of the YT stock area pre-identified as having high bycatch, with the LAGC fishery exempted. The proposed action includes the seasonal closure of pre-identified statistical areas selected for the Georges Bank and Southern New England-Mid-Atlantic yellowtail flounder stock areas from March 1 in the subsequent year until a time determined by the PDT to account for the overage.

*Rationale:* After public comment on Amendment 15, the Groundfish PDT helped refine this AM alternative to be as effective as possible. A method for determining how long an area should be closed was developed that corresponds to observed bycatch rates in that area and the refined alternative included a subsequent year AM, compared to the in-season and Year 3 option considered in the DEIS. Because one of the closure areas encompasses a large part of the Southern New England LAGC fishery, and because that fleet as a whole catches a relatively small amount of the total YT bycatch in the scallop fishery, LAGC trips will be exempted from the AM closures while fishing in exempted areas. These closures would have had high distributional impacts for LAGC vessels with relatively little gain in terms of reducing YT bycatch. The Council clarified that this AM in particular can be adjusted in the future when more data are available to make the seasonal closures as small and real time as possible.

- The proposed action includes No Action on both the stacking and leasing alternatives (Section 3.3)

No additional measures would be implemented to address excess capacity in the limited access scallop fishery. The Council considered voluntary permit stacking and leasing alternatives with various limits, but neither approach was included in the proposed action.

*Rationale*: While the measures included numerous restrictions to prevent excess consolidation and limit potential increases in catch from stacking and/or leasing, the Council ultimately decided that the potential negative impacts on vessels that do not stack or lease outweighed the cost savings, efficiency gains, and conservation of non-fishery resources expected from stacking and leasing. The primary concerns about leasing and stacking voiced by the public and Council members alike included potential loss of jobs on the waterfront that would have trickle-down impacts on other fisheries and communities, potential impacts on future fishing opportunities for vessels that do not stack or lease, potential impacts on other fisheries if scallop vessels redirect effort after leasing out scallop effort, and unintended consequences of additional consolidation in the scallop fishery. The Council was influenced by the overwhelming public opinion against stacking, and decided it cannot be ignored and the lack of support is troubling. It was said that there are too many questions about how permit stacking and/or leasing will affect those who do not choose to participate. Some Council members felt that there are still questions of it being in violation of certain national standards, and it may not be consistent with Council policies developed related to leasing from Amendment 7 in 1998. Stacking could remove hardware from the fishery but unless the fishing power and mortality adjustments are set perfectly, privileges for those that do not stack could be impacted indirectly. Ultimately the Council decided that current permit restrictions, gear and crew restrictions, vessel upgrade restrictions, possession limits and other effort controls are sufficient to control capacity of this fleet, as evidenced by the status of the stock remaining not overfished with no overfishing occurring in the recent stock assessment. Finally, the Council determined there was no immediate conservation need to address excess capacity in the limited access scallop fishery at this time.

- The proposed action includes measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation and update reference points

The current overfishing definition has a static fishing mortality threshold that applies to the entire resource regardless of whether scallops in long-term closed areas contribute to yield. The updated “hybrid” approach chosen combines the overfishing threshold (formerly $F_{max}$, now $F_{msy}$) from the status quo overfishing definition with a fishing mortality target that separates open from access areas. The $F_{target}$ for open areas would be constant, and the $F_{target}$ in access areas would be allowed to fluctuate with time. The Council also accepted the change of reference points from $F_{max}$ and $B_{max}$ to $F_{msy}$ and $B_{msy}$ suggested by SAW 50. *Rationale*: It is clear that the current approach is not consistent with the spatial management of this fishery and can be improved upon. In the long run this hybrid fishing definition should reduce the risk of growth overfishing and increase yield per recruit, having positive impacts on the resource and fishery. Moving the reference points to $F_{msy}$ and $B_{msy}$ from their respective proxies is favored by the SSC and based on the best available science reviewed and approved at SAW50.

- Provision to allow IFQ rollover (Section 3.4.2.1)

The proposed action allows IFQ rollover up to 15 percent of original annual allocation for the general category fishery. NMFS will automatically carryover any IFQ remaining at the end of the fishing year up to 15 percent of the permit holder's original allocation.

*Rationale*: This is seen to be an important component of an IFQ program to provide flexibility and as a safety mechanism for IFQ owners in the case of bad weather/unforeseen circumstances at the end of the fishing year that prevent them from using all their quota. A literature review was conducted to determine typical IFQ rollover amounts in other fisheries. Programs around the world use values ranging from 10-30%, so fifteen percent is a reasonable amount at the lower end of the spectrum. This amount can be reduced if it increases management uncertainty for this portion of the fleet. The literature states that IFQ rollover is seen as an essential part of an IFQ program in order to increase the likelihood of all quota being harvested.

- Modify the general category possession limit (Section 3.4.2.2)

The general category possession limit will be increased to 600 pounds for all LAGC IFQ permit holders.

*Rationale*: This alternative was proposed to respond to comments from the industry that the current possession limit is not always economically feasible due to increased trip costs (fuel, etc). In addition, since this fishery is managed under an ITQ, there are no risks of this increase impacting the resource or other vessels, provided the possession increase is low enough to discourage consolidation. This change will allow small boat owners to be more efficient and provide a safety mechanism in the case of rising fuel costs. Vessels will spend less time steaming so it will cut down on fuel consumed, wear and tear on vessels, and the time fishermen have to spend away from home without causing a large change to the program. The DEIS considered an alternative of up to 1,000 pounds as well as eliminating the possession limit entirely, but this decisions reflects that the Council continues to support that the general category permit remain a "small boat" permit. However, the Council also recognizes that due to changes implemented by Amendment 11 that altered the fishery, as well as increased costs, a moderate increase in possession is justified to keep this fishery profitable and viable.

- Modify the maximum quota one general category can fish (Section 3.4.2.3)

Amendment 15 allows that the maximum quota one general category vessel can fish will be 2.5%.

*Rationale*: Some members of the LAGC fishery argued that the two different ownership cap provisions for the LAGC are currently incompatible because they would require an individual to own more than two vessels if they wanted to own 5% of the quota. This proposed change will make the restrictions more consistent and more efficient for vessel owners.

- Allow LAGC quota to be transferred from IFQ permits (Section 3.4.2.4)

The proposed action will allow LAGC quota to be split from IFQ permits for limited access general category IFQ vessels only. Vessels with LA permits would not be permitted to split quota from a permit.

*Rationale*: This allows for easier movement of quota between fishermen and increases the likelihood that all quota will be harvested. This would provide flexibility compared to current restrictions. Currently, LAGC vessels that want to permanently transfer quota have to purchase the LAGC permit as well as all the other permits a vessel has because permit splitting is not allowed. This makes purchasing LACG IFQ very expensive and in many cases cost prohibitive. There was some interest in allowing quota to move from LA vessels with IFQ to LAGC vessels, but not in the reverse direction, as a way to provide more access to scallop catch for LAGC vessels. However this option was not chosen at this time mostly due to concerns about difficultly monitoring mixed quota from the two categories since they are allocated quota from two separate pools.

- The existing EFH closed areas will be modified to be consistent with EFH areas closed under Multispecies Amendment 13.

Since Phase II of the EFH Omnibus Amendment has been delayed further, access into Georges Bank closed areas is still limited to areas not closed to the scallop fishery for EFH under both the Scallop FMP and the Groundfish FMP. Framework 16/39 (2004) proposed to make the two plans consistent in terms of closed areas to minimize adverse impacts on EFH, but that action was challenged because it was not done in an amendment (just a framework) and, as a result, areas closed for EFH under both Amendment 10 and Amendment 13 still apply to the scallop fishery. *Rationale*: This alternative was included in this action as a placeholder in the event that implementation of the Essential Fish Habitat Omnibus Amendment 2 was delayed, and it has been. The Council discussed the fact that the EFH Omnibus Amendment 2 is the most appropriate place to evaluate and make any changes to the habitat closed areas, but because that action is delayed again several more years, this alternative would make the habitat areas consistent between the Multispecies and Scallop FMPs, as was intended by Framework 16/39. The Council did not support closing both sets of habitat closed areas to scallop gear; the current restrictions resulted from a successful legal challenge related to the modification of habitat closed areas in a framework (i.e. Framework 16/39), rather than in an amendment. By eliminating the scallop EFH closures from Amendment 10, this alternative would have the effect intended by Framework 16/39 for the 2011 fishing year and beyond, unless habitat areas/gear restrictions are subsequently modified by EFH Omnibus Amendment 2. Updated analyses still support that this proposed action will improve practicability for the fleet, reduce area swept in other areas, and provide a potential economic gain that outweighs the costs of the current closure.

- Measures to improve the research set-aside program.
  *Rationale*: The following changes to the RSA program will allow for more effective research by improving timeliness and effectiveness and management and provide indirect benefits to the fishery.

The improvements include:

  - Making the RSA program multi-year, meaning it would be more in line with the specifications process and research projects and TACs could span two years if proposed as such.
    *Rationale:* This alternative would increase flexibility for the applicant, reduce time and resources spent on the application and review process, and provide funding for some longer-term projects. There are certain management needs that would benefit from two years of work rather than a single year. This alternative would also reduce the burdens associated with the application process, review process, and issuance of experimental fishing permits (EFPs) when necessary.
  - The RSA set-aside allocation for both open area DAS and access area trips will be changed from a percentage to a set poundage, and that poundage can be adjusted

by framework.
*Rationale*: Allocating a fixed amount (in pounds rather than a percent) would enable the announcement to come out earlier because the agency would know the total amount of TAC available for research before the specification package is approved – it would be a set amount that is the same poundage every year. This also guarantees that enough resource will be available for research in years when the biomass is down, since this is often when research is most needed.

- The Council supports increasing the amount of set-aside, initially seta at 1.25 million pounds. Set-aside funds will not be further subdivided by research topic.
*Rationale:* The amount of set-aside was increased to recognize the importance of research. The total set aside was set at 1.25 million pounds, about 2.5% of the estimated long-term catch level, rather than 3%. The Council supports that this program needs to be flexible, so the set-aside was not further subdivided by topic.
- A grace period of one quarter of the following fishing year will be implemented as an extension for harvesting compensation TAC.
*Rationale:* Currently all RSA TAC has to be harvested by the end of that fishing year. This measure would allow increased flexibility in the form of a grace period during which the applicant could harvest compensation TAC beyond the end of the fishing year if an applicant cannot harvest their RSA pounds in the case of an engine failure or other unforeseen circumstance. Researchers would still have to notify NMFS if an extension is needed, but the FMP would allow for compensation fishing for an additional three months into the next fishing year.
- There is support for increasing public input of the RSA process through increased involvement of the advisory panel.
- Finally, three measures were identified from which RSA projects could be exempt if identified in the proposal. These are crew restrictions, the seasonal closures access areas, and the requirement to return to port if fishing in more than one area.
*Rationale:* Many of the existing restrictions prevent researchers from conducting projects in areas and times that are of high priority in terms of improving management. And some existing measures like a requirement to return to port only increase research costs.

- The proposed action includes adding a third year of specifications to the framework process. This will be superseded by the next framework, but if that subsequent action is implemented late due to current timing issues, the third year of measures will be there as a default rather than previous year allocations rolling over.

As mentioned above, repeated delays in implementation of actions has caused confusion and outdated measures get implemented during rollover of No Action from the current framework, but there is little industry or Council support for changing the fishing year due to socioeconomic issues.

*Rationale:* To address the above problem in the absence of changing the fishing year, at the suggestion of the Regional Office, the Council decided to add a third year to the specifications process (framework adjustment). This will allow the Council to create measures for Year 3 that are in line with survey results and biomass projections, doing away with current problems of rollover measures that are more consistent with science and PDT recommendations. The intention is that these specs will be superseded by the specifications in a future framework that will include more up to date information as soon as they are implemented. This serves as a "safety mechanism" to prevent against No Action rollovers during implementation delays that do not make sense for the industry and resource and may cause undesired negative effects or require further management intervention. Projecting management measures for the third year will be relatively uncertain, but will likely be more desirable and have a better chance of preventing overfishing than No Action measures that automatically rollover in the event of a delayed implementation. This action recognizes that future frameworks will continue to be delayed since updated resource data are not available until August, making final action in September impossible. Therefore, final action will likely continue to be at the November Council meeting so that NMFS can target implementation before June, after the March 1 start date.

- Items to be added to the list of frameworkable items in the FMP:
    - Modify the general category possession limit

This action proposes to change the possession limit to 600 pounds. There has been discussion throughout development of Amendment 11 and since that a possession limit is somewhat inappropriate in an IFQ fishery and is not really needed in terms of controlling mortality. But the Council still supports that the LAGC fishery remain a "small day-boat" fishery and understands fears that eliminating the possession limit or increasing it substantially may threaten this. However, making the possession limit frameworkable would allow the Council to adjust the possession limit up or down in response to changing needs of the recently-implemented IFQ program.

- Adjustment to aspects of ACL management

This action proposes implementing a new management strategy under ACL management that will use many new measures. All of the measures specified in this action would be able to be modified through framework actions. The specific ACL related measures that could be modified by framework include: modifying associated definitions and specification of OFL, ABC, ACLs and ACTs, all of which are specifically intended to be changed in future frameworks or specification packages as new information becomes available about the resource and fishery; the buffers identified for management uncertainty or scientific uncertainty (ABC control rule); accountability measures for scallop ACLs and other sub-ACLs allocated to the scallop fishery; monitoring and reporting requirements associated with ACLs, timing of AM measures, and new ACLs that are not currently part of this program.

- Modify the amount of the Research set-aside program allocation

The Council voted in this action to change the research set-aside from a percentage of the ABC/ACL to a set poundage every year. Adding this to the list of frameworkable items will allow the Council to more easily adjust the allocation up or down as needed in terms of research priorities.

- Modify the EFH boundaries

The proposed action will change the EFH boundaries to be consistent with Multispecies Amendment 13. This was done in response to the continued delay of the Omnibus EFH Amendment. This same change was attempted in Framework 16/39 (2004) to minimize adverse impacts on EFH, but that action was challenged because it was not done in an amendment (just a framework). Adding this to the list of frameworkable items will allow the Council to make further changes to benefit EFH should prolonged delays to the Omnibus EFH Amendment occur or if it is more practicable to make adjustments by framework.

*Rationale*: These items will be added to the list of frameworkable items in order to provide more streamlined and timely changes to management. The items listed are unlikely to cause major impacts to the fishery and all impacts would be fully assessed in the future framework action that considers one of these new frameworkable items. If a change to one of these items will cause significant impacts, it is likely that a full impact statement will be triggered. Having these items frameworkable will add flexibility and help to make the scallop FMP more effective.

**Table 2 - List of alternatives included in Amendment 15, with proposed action highlighted by bold text and shading.**

| SECTION | ALTERNATIVE | DESCRIPTION |
|---|---|---|
| 3.1 | **NO ACTION** | |
| 3.2 | **COMPLIANCE WITH RE-AUTHORIZED MAGNUSON-STEVENS CONSERATION AND MANAGEMENT ACT** | |
| **3.2.1 and 3.2.2** | **Definition and integration of new terms** | This section includes a description of all the ACL related terms and identifies what they are for the Scallop FMP. |
| 3.2.3 | **ALTERNATIVES UNDER CONSIDERATION FOR IMPLEMENTING ACLs IN THE SCALLOP FMP** | |
| 3.2.3.1 | No Action | The process for implementing Annual Catch Limits will not be adopted in this action. |
| **3.2.3.2** | **ACL Structure** | The overall ACL will be divided between LA and LAGC fisheries. Each sub-ACL will have an ACT with buffers. |
| **3.2.3.3** | **Northern Gulf of Maine ACL** | NGOM fishery will have a separate ACL and associated hard TAC because the resource is not currently incorporated into the assessment. |
| **3.2.3.4** | **Other sources of scallop fishing mortality** | Discards, incidental catch mortality, and state catch will be removed before setting OFL. |
| **3.2.3.5** | **ACL sub-components** | Scallop plan will have 2 sub-ACLs - LA and LAGC. Each sub-ACL will have an associated ACT with AMs. Catch from incidental permits and set-asides will be removed before ACL is divided. LA sub-ACL = 94.5% and LAGC sub-ACL = 5.5%. |
| **3.2.3.6** | **Placement of terms and buffers for uncertainty** | This section describes how ACL related terms are associated - see Figure 2. |
| **3.2.3.7** | **Description of scientific uncertainty** | |
| **3.2.3.7.1** | **Qualitative analysis of scientific uncertainty** | Sources were assessed with a numeric uncertainty level and a numeric importance/effect level to account for uncertainty in the assessment. |
| **3.2.3.7.2** | **Quantitative analysis of scientific uncertainty** | SSC requested the PDT quantify the uncertainty in OFL (uncertainty in Fmsy and projected stock biomass). |
| **3.2.3.7.3** | **ABC control rule** | ABC will be set corresponding to a fishing mortality that has 25% chance of exceeding OFL. |
| **3.2.3.8** | **Description of management uncertainty** | Seven overall sources have been identified, two of which are no longer an issue. Primary source is catch from open area DAS. |
| 3.2.3.8.1 | Buffer between limited access ACL and ACT | |
| | **LA ACT set at *F* rate with 25% probability of exceeding total ACL = ABC** | Based on identifying an F rate with 25% probability of exceeding ABC. Currently, this estimate is 0.24 when ABC is set at 0.28. |

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| | Identify a specific buffer based on results of new analyses of A) variability in estimate of LPUE, or B) projected LPUE compared to actual estimates from open area DAS. | The Scallop Committee requested that one option base the LA buffer primarily on the uncertainty in open area catch since that has been identified as the primary source of management uncertainty for the fishery. 10% was identified as a reasonable buffer for this option. |
| 3.2.3.8.2 | Buffer between general category sub-ACL and ACT | |
| | **Zero buffer (LAGC ACL = LAGC ACT)** | Sub-ACL would be equal to ACT in the general category fishery. |
| | Up to 5% buffer to account for potential monitoring concerns, IFQ carryover provision and other implementation error | Some value up to 5% would be discounted from the general category sub-ACL to create the GC ACT. |
| 3.2.9 | Accountability measures for scallop ACLs | |
| 3.2.3.9.1 | Limited access AMs | |
| | **Use of ACT** | Setting allocations lower than LA-ACL would reduce the likelihood of exceeding ACL, acting as a proactive AM. |
| | **Overall DAS reduction in the subsequent year to account for overage** | PDT will identify how much ACL was exceeded and identify appropriate DAS equivalent for that overage. |
| | **Include a disclaimer for when LA AM would not be triggered** | If overall F is re-estimated after the fishing year has ended and is more than one standard deviation below overall F for ACL, AMs would not be triggered in LA fishery. |
| 3.2.3.9.2 | General category AMs | |
| | **Use of ACT** | Setting allocations lower than LA-ACL would reduce the likelihood of exceeding ACL, acting as a proactive AM. |
| | **IFQ reduced in subsequent fishing year** | If an individual exceeds their IFQ, it will be reduced the following year by the same amount. |
| 3.2.3.9.2.1 | **Option to allocate catch to LAGC if LA disclaimer is triggered** | If the disclaimer for the limited access fishery is triggered, Alternative 3.2.3.9.1.1, then 5.5% of the difference between the exceeded limited access sub-ACL and the actual limited access landings will be allocated to the general category IFQ fleet in the next fishing year. |
| 3.2.3.9.3 | NGOM AMs - page 48 | |
| | **Reduce Hard TAC subsequent year** | If the hard TAC in Year 1 is exceeded, overall hard TAC in year 2 will be reduced by the overage. |
| 3.2.3.10 | Scallop ACLs for other fisheries | No other fisheries catch an appreciable amount of scallops as discards - see Table 14. |
| 3.2.3.11 | ACLs set in other FMPs for the scallop fishery | |
| 3.2.3.11.1 | Analysis used to identify potential non-target species | The Council has determined that a primary FMP must identify a sub-ACL for the scallop fishery, if no sub-ACL is identified catch from the scallop fishery must be accounted for in a different way - i.e. removed as discard mortality. |
| 3.2.3.11.2 | Yellowtail Flounder | |

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| **3.2.3.11.2.1.1** | **Seasonal closure of a portion of the stock area pre-identified as having high bycatch** | The PDT would identify areas that have higher bycatch rates within a stock area and these areas would close to both LA and GC when the sub-ACL is reached. |
| *Option A* | In-season | YT catch would be monitored by stock area during the year, and when a specific level near 100% (maybe 75%) is reached the pre-identified areas of high bycatch would be closed. |
| *Option B* | AM effective in year 3 | At the end of the FY NMFS will determine the total YT caught in each stock area and if it exceeds the sub-ACL the pre-identified areas will close in Year 3. |
| 3.2.3.11.2.1.2 | In-season closure of entire YT stock area | The entire YT stock area would be closed to both LA and GC vessels when the sub-ACL is reached. |
| 3.2.3.11.2.1.3 | Fleet wide maximum of DAS and percent of IFQ that can be used in a stock area | Would institute a fleet-wide maximum of DAS and IFQ that can be used in a stock area for Year 3 to account for an overage of the YT sub-ACL in Year 1. |
| 3.2.3.11.2.1.4 | Individual maximum of DAS and percent of IFQ that can be used in a stock area | Would institute an individual maximum of DAS and IFQ that can be used per vessel in a stock area for Year 3 to account for an overage of the YT sub-ACL in Year 1. |
| 3.2.3.11.2.1.5 | Revise the opening date of access areas on Georges Bank | The opening date of access areas would be modified (made earlier) to avoid yellowtail bycatch. This does not count as an AM - it is a bycatch reduction tool. |
| 3.3 | **MEASURES TO ADDRESS EXCESS CAPACITY IN THE LIMITED ACCESS FISHERY** | |
| **3.3.1** | **No Action** | No measures would be taken to reduce capacity in the LA scallop fishery. |
| 3.3.2 | **PERMIT STACKING - page 60** | |
| 3.3.2.1 | Restrict action to two permits only | Stacked vessels could have no more than two permits. |
| 3.3.2.2 | Fishing power adjustment for stacking permits | Vessels of unequal size and horsepower would have their permits adjusted to account for increased LPUE. Different adjustment applied depending on vessel characteristics. Second mortality adjustment would be applied on all stacking transactions - PDT recommendation of 7-11%. |
| 3.3.2.2.1 | Permits can be stacked provided there is a fishing power adjustment | A fishing power adjustment would be applied based on HP and length class of each vessel, plus a second mortality adjustment somewhere between 5-11%. |
| 3.3.2.2.2 | Permits can only be stacked which meet replacement criteria | Permits could be stacked but only if the baseline specifications of the permits involved meet the current vessel replacement criteria. No adjustments would be applied. |
| 3.3.2.2.3 | Permits in same replacement criteria category have no adjustment applied and permits from different categories would be subject to adjustment | No adjustment if vessels are in the same category, otherwise the same adjustment as in 3.3.2.2.1 would be applied to stacked permit if it is from a different baseline groups. |
| 3.3.2.2.4 | Restriction on stacking for trawl permits | If a trawl permit has converted to dredge through annual declaration and it stacks, it is prohibited from returning to trawl gear as stacked vessel. |

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| 3.3.2.3 | DAS carryover provision for a vessel with stacked permits | |
| 3.3.2.4 | Status of stacked permits | Permits are stacked as 'bundles,' and all permits are stacked with a vessel (all species). Clarified that stacked permits keep their identity and individual permits could toward the 5% ownership cap. |
| *Option A* | Permits can de-stack | A vessel could de-stack and re-stack in the future. Leased effort is used first. |
| *Option B* | Permits cannot de-stack | Stacking would be a one-time action. |
| 3.3.3 | **LEASING** | |
| 3.3.3.1 | Leasing of open area DAS | LA vessel could lease part or all of its open area DAS allocation on an annual basis in full day amounts to other vessels with LA permits. |
| 3.3.3.1.1 | Fishing power adjustment for leasing open area DAS | |
| | *Option A* | All leasing of DAS would be subject to a fishing power adjustment similar to the one proposed for stacking. |
| | *Option B* | No adjustment would be applied, but vessels restricted to lease from vessels within the same HP/length category. |
| | *Option C* | No adjustment unless vessels lease from vessels outside their baseline category; then the same adjustment as option A would occur. |
| 3.3.3.1.2 | DAS and landings history | |
| | *Option A* | Lessor will maintain DAS usage history and catch from leased effort would accrue to Lessee. |
| | *Option B* | DAS usage and catch history is applied to the Lessor. |
| 3.3.3.2 | Leasing of access area trips | Allows leasing of one or more access trips on an annual basis. Leased effort is used first. |
| 3.3.3.3 | Maximum DAS that can be leased | The Lessee may lease open area DAS and access trips up to twice the amount of allocation. |
| 3.3.3.4 | Ownership cap provisions | |
| | *Option A* | Any individual that owns the max number of permits allowed may not lease additional DAS or access trips, but leasing between vessels of same owner allowed. |
| | *Option B* | Permit ownership and leasing of DAS and access trips shall be limited to no more than 5% of permits and 5% of allocation, not withstanding Option A. |
| 3.3.3.5 | Leasing restrictions options | |
| | *Option A* | Restrict leasing to vessels in the same permit category only. |
| | *Option B* | Leasing would be allowed between different permit categories for access area trips only. Lessee limited to possession limit of Lessor. |
| 3.3.3.6 | Application requirements | Details of requirements for leasing applications and deadlines specified. |
| 3.3.3.7 | Leasing from vessels in CPH | |
| | *Allow leasing from vessels in CPH* | Leasing from vessels in CPH would be allowed and subject to the same restrictions as leasing from active vessels. |

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| | *Prohibit leasing from vessels in CPH* | Leasing from vessels in CPH would be prohibited. |
| 3.3.3.8 | Sub-leasing | Sub-leasing and re-leasing of DAS and trips would be allowed subject to same restrictions applied to original leases. Carryover of leased DAS and trips prohibited. |
| 3.3.3.9 | Other Leasing Provisions | Several provisions clarified |
| 3.4 | **MEASURES TO ADJUST SPECIFIC ASPECTS OF FMP AND MAKE OVERALL PROGRAM MORE EFFECTIVE** | |
| 3.4.1 | **MEASURES TO ADJUST THE CURRENT OFD TO BE MORE COMPATIBLE WITH AREA ROTATION** | |
| 3.4.1.1 | No action. | The OFD will be left as status quo. |
| 3.4.1.2 | A10 OFD – Time averaged within specific areas | The threshold for open areas would be set using a time-averaging principle, which will typically be higher than it is for the open areas, and the threshold for open areas the conventional Fmax. |
| **3.4.1.3** | **Hybrid overfishing definition alternative** | Combines status quo with A10 to set Ftarget in the open and access areas individually at levels that will obtain optimal yield. |
| **3.4.1.4** | **Update reference points** | Based on results of SAW50, reference points will be updated to Fmsy and Bmsy. |
| 3.4.2 | **MINOR ADJUSTMENTS TO THE LIMITED ACCESS GENERAL CATEGORY MANAGEMENT PROGRAM** | |
| 3.4.2.1 | Provision to allow IFQ rollover | |
| 3.4.2.1.1 | No action | Status quo would maintain that IFQ expires at the end of a fishing year. |
| **3.4.2.1.2** | **Allow rollover of up to 15% of IFQ** | An IFQ permit holder could carry forward up to 15% of their IFQ to the proceeding fishing year. The rollover would be automatically conducted by NMFS. |
| 3.4.2.3 | Modify the general category possession limit | |
| 3.4.2.3.1 | No action | Under the status quo possession limit would be maintained at 400 lbs. |
| **3.4.2.3.2** | **Modify the possession limit up to 1000 lbs** | The Council identified the final possession limit as 600 lbs at the final meeting. |
| 3.4.2.3.3 | Eliminate the possession limit | This alternative would eliminate the possession limit for LAGC vessels. |
| 3.4.2.4 | Modify the maximum quota one vessel can fish from 2% to 2.5% of total general category allocation | |
| 3.4.2.4.1 | No action | The current restriction of 2% maximum quota allocation would be maintained on each LAGC vessel. |
| **3.4.2.4.2** | **Modify the maximum quota one vessel can fish from 2% to 2.5% of total general category allocation** | The maximum quota per vessel restriction would be changed from 2% to 2.5% of the total general category allocation. |
| 3.4.2.5 | Allow LAGC quota to be transferred from IFQ permits | |
| **3.4.2.5.1** | **Allow LAGC IFQ permit owners to permanently transfer some or all quota allocation to another IFQ permit holder** | Would allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their permit to another permit holder while retaining the permit itself. |
| 3.4.2.5.2 | Allow LAGC IFQ permit owners to permanently transfer some or all allocation to a community-based trust or permit bank | Permit owners could permanently transfer some or all of their quota independent of their permit to a community-based trust or permit bank while retaining the permit itself. A permit bank could lease/transfer the IFQ to any LAGC IFQ permit holder. |

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| 3.4.2.6 | Implementation of Community Fishing Associations | |
| **3.4.2.6.1** | **No action** | CFAs would not be implemented. |
| 3.4.2.6.2 | Establish process for CFAs | Non-profit entities could hold quota which can be leased to individuals with LAGC permit within a defined community. Alternative specifies definition of CFA, qualification of CFA, geographic designation, participation requirements, standards, restrictions, application process, criteria for evaluation, accumulation limits, and reporting and monitoring requirements. |
| | Limits on what can a CFA own and lease out | |
| | *Option A - quota only* | |
| | *Option B - quota and permits* | |
| 3.4.3 | **MEASURES TO ADDRESS EFH CLOSED AREAS IF EFH OMNIBUS AMENDMENT 2 IS DELAYED** | |
| 3.4.3.1 | No action | Measures currently in place to minimize impacts on EFH would be maintained, including both sets of EFH closed areas under A10 and A13. |
| **3.4.3.2** | **Modify EFH closed areas to scallop gear under A10 to be consistent with MS Amendment 13** | The EFH closed areas would be made consistent under both FMPs to minimize impacts on EFH. |
| 3.4.4 | **MEASURES TO IMPROVE RESEARCH SET-ASIDE PROGRAM** | |
| 3.4.4.1 | No action | No changes would be made to the existing program. |
| **3.4.4.2** | **Publish federal funding opportunity as early as possible** | NMFS would publish funding announcements by June before the beginning of the following fishing year. |
| **3.4.4.3** | **Extend the RSA program to be multi-year** | The length of time for research priorities would be increased with flexibility, allowing projects to be funded for up to two years - length of FW. |
| **3.4.4.4** | **Modify open area RSA allocation from DAS to pounds** | RSA will be converted from 2% of open area DAS to the approximate equivalent poundage, starting with 1.0 million pounds. |
| **3.4.4.5** | **Modify entire RSA allocation to a fixed poundage rather than a percent, with allocation of 1.25 million lbs** | A set amount of catch would be allocated each year which would allow the announcement to come out earlier each year. |
| 3.4.4.6 | Separate RSA TAC into 2 subsets (survey and other) | Survey-related research is highest priority and separating the TAC will help emphasize survey research proposals. |
| **3.4.4.7** | **Remove additional TAC specific for survey work in addition to 2% set-aside** | This considered adding an additional 1% (making the total 3%) set-aside for access area surveys, leaving 2% for all other work and emphasizing the need for AA surveys. This alternative was clarified to specify that the initial set-aside should be 1.25 million pounds, closer to 2.5%, and RSA set-aside should not be further sub-divided. |
| 3.4.4.8 | Rollover of RSA TAC | |

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| 3.4.4.8.1 | Rollover of unused RSA TAC to the next FY | Unused RSA TAC would roll over to the RSA funding announcement for the following year. |
| 3.4.4.8.2 | Rollover of unused RSA TAC to second solicitation in same FY | Unused RSA TAC would roll over to a 2nd announcement for the same year and all would need to be harvested by the end of that fishing year. |
| 3.4.4.8.3 | Rollover of unused TAC to same individuals for program development funds | Unused RSA TAC would be given to the same individuals that received TAC that year so their research could be furthered with it. |
| 3.4.4.8.4 | Rollover of unused TAC to help fund observer program | Unused RSA TAC would roll over to the industry-funded observer program. |
| **3.4.4.8.5** | **Rollover of unused TAC to compensate awarded projects** | Would allow the Agency to allocate unused TAC if it was determined that $/lb estimates used in the FFO were low. |
| **3.4.4.9** | **Extension for harvesting compensation TAC** | A grace period would be developed to allow harvest of compensation TAC beyond the FY if the vessel was unable to do so during the FY due to hardship. |
| **3.4.4.10** | **Increase public input of RSA review process** | It has been suggested that the Scallop AP could identify research priorities for the Cmte and have more input during the management review of proposals. |
| **3.4.4.11** | **Regulations from which RSA projects are exempt** | RSA projects could be exempt from crew restrictions, seasonal closures in access areas, and requirement to return to port if fishing in more than one area. |
| 3.4.5 | **MEASURES TO CHANGE THE SCALLOP FISHING YEAR** | |
| **3.4.5.1** | **No Action** | The scallop fishing year would remain with a start date of March 1. |
| 3.4.5.2 | Change start of fishing year from March 1 to May 1 | The start date of the fishing year would be moved to May to accommodate the availability of survey results and take advantage of better weather months. |
| **3.4.5.3** | **Extend scallop spec packages to include third year default measures** | This alternative would extend the fishery specification process to include a third year of allocation measures that would be effective if subsequent framework actions are delayed. |
| 3.5 | **ITEMS TO BE ADDED TO THE LIST OF FRAMEWORKABLE ITEMS IN THE FMP** | |
| **3.5.1** | **Modify the general category possession limit** | Regardless of 3.4.2.3.2 or 3.4.2.3.3, modifications to the possession limit would be added to the list of frameworkable items for the future. |
| **3.5.2** | **Adjustment to aspects of ACL Management** | Specific ACL-related measures including OFL, ABC, ACLs, ACTs and their related buffers would be made frameworkable. |
| 3.5.3 | Fishing power adjustments | If selected in Amendment 15, FPAs would be made frameworkable in order to be modified at a later date. |
| **3.5.4** | **Adjusting EFH boundaries** | EFH boundaries would be adjustable by framework. |
| **3.5.5** | **Adjusting research set-aside allocation** | This action proposes making the RSA set-aside a poundage, and this value could be adjusted up or down by framework. |

## 3.1 NO ACTION

The National Environmental Policy Act (NEPA) requires that the "No Action" alternative be included and considered in a federal action. This alternative summarizes the existing management measures in place if the Council does not approve Amendment 15 (additional regulatory text can be found in CFR §648.50 through §648.63). Subsequent sections also include a No Action alternative, but they are specific to that management topic, whereas this section is a summary of all measures currently in place. If no action is taken on Amendment 15, these measures will remain in effect.

*General Restrictions*

A minimum shell height of 3.5 inches was implemented along with a 4" dredge ring size to ensure larger scallops are landed, thus allowing smaller scallops to grow to maturity. Additionally, other conservation measures have been implemented, such as a 144 ft maximum trawl sweep for trawl vessels with a mesh size no smaller than 5.5 inches if possessing more than 40 pounds of shucked scallops, and a combined dredge width of no more than 31 feet for dredge vessels. Limited access vessels fishing under the scallop DAS program are not allowed more than seven people aboard (with some exceptions; most notably in access areas) to limit harvesting power, and sorting and shucking machines are also prohibited.

*Scallop Management Procedure and Possession Limits*

Biennially, or upon request by the Council, the status of the scallop resource is analyzed. Based on the analysis, a Stock Assessment and Fishery Evaluation (SAFE report) is prepared by the Scallop PDT that provides information and analyses necessary to evaluate potential management adjustments. Based on these analyses, a framework adjustment process may be initiated to establish or revise TAC, DAS allocations, the rotational management programs, percentage allocations for LAGC vessels in access areas, scallop possession limits, or other measures toward achieving FMP objectives, achieving OY, and limiting fishing mortality. Designation of a rotational area is based on general rotation policy, boundaries and distributions of rotational closures, number of closures, minimum closure size, and other variables listed in section §648.55. To ensure OY is achieved and overfishing is prevented on a continuing basis, the PDT's recommendations take into account: different fishing mortality rates for the various spatial components of the resource, overall yields from the portions of the scallop resource available to the fishery, creating or dissolving rotational access areas, and potential adverse impacts on EFH. Categories from which the Council's recommendation for adjustments or additions to management measures are available in section §648.55 and include items such as shell height, effort monitoring, data reporting, and trip limits. Framework adjustments can also address interactions between the scallop fishery and protected resources such as sea turtles, such that the frameworks contain proactive measures including seasonal closures, gear modifications, and increased observer coverage. From the PDT recommendations, the Council must select alternatives that achieve OY and prevent overfishing on a continuing basis that are also consistent with other applicable laws. Framework adjustments can also address gear conflicts.

Total allowable catch (TAC) is established through the framework process, as are the access area TACs and open area TAC. The annual target TAC includes the TAC for all scallop vessels for both open and access areas, and the observer and research set-asides, but excludes the NGOM TAC and estimated incidental scallop catch. The general category program has converted to an IFQ system. The GC fishery is allocated 5% of the fishery ABC, and IFQ scallop vessels with an LA permit are allocated 0.5% of the annual target TAC. Of the available DAS, 1% is set aside to help defray the cost of observers and 2% is set aside for research funding. Ownership restrictions for the IFQ program state that a vessel platform cannot have more than 2% of the IFQ allocation and a person cannot have an ownership interest in more than 5% of the IFQ allocation. Temporary and permanent transfers of IFQ are allowed, but subject to restrictions found in paragraph (h)(5)(iii) of section §648.53.

An LAGC vessel has a possession limit of 400 lbs per trip, while an NGOM-permitted vessel has a possession limit of 200 lbs shucked scallops, and an incidental permit is allowed 40 lbs shucked scallops per trip. LA-permitted vessels have an 18,000 lb trip limit. LA vessels are allowed also to carry over 10 unused open area DAS into the following fishing year.

Limited Access scallop vessels are exempt from the DAS requirements and gear and possession restrictions when fishing landward of the outer boundary of a state's waters. A state may be eligible for the state waters exemption if it has a scallop fishery and a scallop conservation program that does not jeopardize the biomass and fishing mortality/effort limit objectives of the scallop FMP.

DAS allocations and other management measures are specified for each scallop fishing year, which begins on March 1 and ends on February 28 (or February 29), unless otherwise noted.

*Rotational Access Area Program and EFH*

A sea scallop area rotation program was implemented in Amendment 10 and is subject to the framework adjustment process. A percentage of total allowable catch for each access area that is allocated to LA and LAGC vessels is specified via framework adjustments. There are six rotational access areas. In the Mid-Atlantic, the rotational access areas include Hudson Canyon, Delmarva, and Elephant Trunk. The Georges Bank access areas include Closed Area I, Closed Area II, and Nantucket Lightship. The Georges Bank access areas were initially part of groundfish EFH, but the scallop fishery was granted access to portions of these EFH areas due to the high abundance of large scallops and low abundance of yellowtail flounder, a common bycatch species in the scallop fishery. The Mid-Atlantic access areas were created as part of this rotational area management program from the outset. Detailed boundary latitudes and longitudes for each access area can be found in §648.59. Each area has specific access rotation schedules. For example, Closed Area I is managed on a 3-year cycle: a 1-year closure followed by a 2-year access program beginning with a 1-year closure starting on February 28, 2007. See Section §648.59 for the specific schedules. When an access area is closed, no vessel may fish for scallops in, or possess or land scallops from the area.

The EFH protected areas (from which the Georges Bank access areas were carved) that are closed to scallop fishing include: Closed Area I EFH Closure, Closed Area II EFH Closure, Nantucket Lightship EFH Closure, and Western Gulf of Maine EFH Closure. The specific latitudes and longitudes for each EFH closed area can be found at §648.61. Vessels may transit these areas as long as their gear is stowed according to §648.23(b).

Vessels fishing in Closed Areas I or II, or Nantucket Lightship Access Areas cannot fish with trawl gear. All gear must be stowed while transiting outside an access area. All catch must be offloaded in one location and the owner or operator must submit reports through the VMS for each day fished when declared into an access area. If an access area trip is terminated early before catching the allowed possession limit, a vessel may be authorized to fish an additional trip to harvest the remainder of the possession limit based on conditions outlined in §648.60.

LA and LAGC vessels may both fish in the scallop access areas and are allocated quota based on a percentage decided through framework action (currently at 10% for LAGC vessels and 90% for LA vessels during the conversion to an IFQ program for LAGC vessels). The quota is decided for each access area based on that area's biomass level annually (unless closed per protocol).

With respect to LA vessels, if necessary the regulations allow for an adjustment of trip levels based on the annual resource survey if the 2$^{nd}$ year of the biennial framework adjustment has allocated too many trips to an access area. Vessels may exchange unutilized trips to access areas on a one-for-one trip basis. LA vessels may land up to 1,000 lbs of all NE multispecies combined, although there are additional restrictions for Atlantic cod, haddock, and yellowtail flounder. A vessel can land up to 100 lbs of Atlantic cod per trip for personal use only. A vessel can land up to the overall NE multispecies possession limit of haddock except from January 1 through June 30. Limited access vessels are subject to a yellowtail flounder TAC in access areas. Should the yellowtail flounder bycatch TAC be reached, vessels are no longer allowed to declare and initiate a trip with the access areas. A vessel with remaining trips may fish open area DAS up to maximum number of DAS specified, based on conversions located in §648.60. With respect to SNE/MA YTF, vessels fishing in the Nantucket Lightship Access Area may land up to the overall possession limit of all NE multispecies combined, except between June 15 and June 30 when they may land no more than 250 lbs per trip of SNE/MA YTF. For GB YTF, vessels fishing in Closed Area I or II access areas may land up to 1,000 lbs per trip of YTF subject to the amount of other NE multispecies onboard until the area is closed due to the full harvest of YTF TAC, after which no vessel may harvest or land YTF from those access areas.

LAGC scallop vessels, except those with a NE Multispecies permit or LAGC permit fishing in an approved SAP, are only allowed to fish in Closed Areas I and II and Nantucket Lightship Access Areas and are subject to possession limits and seasonal restrictions. Furthermore, these LAGC vessels may fish with dredge gear only with a combined dredge width not exceeding 10.5 feet. LAGC vessels are not allowed to possess any species other than scallops.

*Northern Gulf of Maine Scallop Management Area*

The NGOM scallop management area is the area north of 42º 20' North and within the boundaries of the Gulf of Maine Scallop Dredge Exemption Area. A vessel with an NGOM scallop permit may fish for and possess scallops only in the NGOM scallop management area. Scallop landings by vessels with LAGC scallop permits (including IFQ permits) and fishing in the NGOM are deducted from the NGOM scallop TAC and scallop landings by IFQ vessels in the NGOM will have those landings subtracted from their respective individual IFQs. Landings by the LA scallop vessels fishing under the scallop DAS program are not deducted from the NGOM total allowable catch. Vessels with an NGOM or IFQ scallop permit may land up to 200 lbs of shucked scallops in the NGOM. A vessel with an incidental catch GC permit can land up to 40 lbs shucked scallops in the NGOM. The NGOM TAC is specified via a framework adjustment and is based on the Federal portion of the scallop resource in the NGOM. Details about the current TAC can be found at §648.62. Except for LA-permitted scallop vessels, the combined dredge width allowed for LAGC vessels fishing in the NGOM cannot exceed 10.5 feet.

*General Category Sectors*

Sector proposals for a group of LAGC scallop vessels can be submitted to the Council at least one year in advance of the start of the proposed sector. The Sector can be implemented through a framework process. General requirements for sectors can be found in §648.63(b), which include participation and allocation provisions. Only LAGC scallop vessels are eligible to form sectors and sectors may choose which eligible permit holders can be included and excluded from their sector. However, the Council must approve participation by incidental catch or NGOM scallop vessels in the sector. A vessel cannot be a member of more than one sector. The sector allocation equals the percentage share of the TAC allocation for IFQ scallop vessels, similar to an IFQ scallop vessel's IFQ. The sector's percentage share will not change, but the amount allocated will change based on the TAC; additionally, the sector will not be allocated more than 20% of the TAC for IFQ vessels. Details about creating operations plans can be found at §648.63(c), including what the operations plan must contain. Section §648.6(d) contains information about sector review, approval, and revocation.

*Research Set-Aside*

The Council and NMFS issue a Request for Proposals (RFP) annually that identifies research priorities for projects that will be conducted by vessels using research set-aside. NMFS makes the final determinations about which proposals are approved and which vessels are authorized to take scallops in excess of possession limits, utilize DAS set-aside for research, or take additional Access Area trips. NMFS also authorizes activities of specific vessels through avenues such as Exempted Fishing Permits. After completing the research, the researchers must provide the Council and NMFS with a final report that includes a description of data collection methodology and data analyses, and a discussion of results and conclusions.

*Scallop fishing year*

The scallop fishing year would continue to begin on March 1. The Council would likely take final action on biennial measures at its November meeting because updated survey information would likely not be available at its September meeting. Implementation of measures for the new fishing year would likely be delayed beyond March 1, so transition measures would continue to be required under each biennial framework.

## 3.2 MEASURES TO ADDRESS COMPLIANCE WITH RE-AUTHORIZED MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (MSA)

The MSA was reauthorized in 2007. Section 104(a) (10) of the Act established new requirements to end and prevent overfishing, including annual catch limits (ACLs) and accountability measures (AMs). Section 303(a)(15) was added to the MSA to read as follows: ''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.'' ACLs and AMs are required by fishing year 2010 if overfishing is occurring in a fishery, and they are required for all other fisheries by fishing year 2011. The Council intends to approve this action during the summer of 2010 so that measures establishing ACLs can be implemented by the start of the 2011 fishing year, as required by the MSRA.

According to NMFS, overfishing still occurs at various levels in 48 fisheries in US waters. Therefore, the highest priority of the reauthorized MSA was to strengthen the Act to end overfishing. The Act also included new fishery-wide requirements for the role of scientific advice in the management process that the Council will address through revised Science and Statistical Committee (SSC) policies and procedures. This amendment will not include measures to comply with new SSC requirements; they will be implemented across all FMPs under NEFMC jurisdiction.

Before guidance was published, Rosenberg et al., through the Lenfest Ocean Program, published "Setting Annual Catch Limits for U.S. Fisheries: An Expert Working Group Report" in 2007. This group provided principles to setting ACLs, as well as a process. Their principles are summarized as follows: ACLs should prevent overfishing for all stocks within a fishery and ensure rebuilding requirements are met; ACLs should take into account the consequences of overfishing; uncertainty should be accounted for when setting ACLs as well as stock vulnerability; consider not grouping stocks because that can undermine sustainability; buffers should be increased proportionally with risk of overfishing; and ACLs should be used to compare actual catch to determine how well the management plan controlled fishing.

With some rewording to make this applicable to scallops, the Lenfest working group's guidance on the process for setting ACLs is as follows: scientists should evaluate vulnerability and susceptibility to the fishery and then determine a sensible OFL based on MSY and uncertainties; managers should decide an acceptable level of risk for exceeding OFL considering the consequences of overfishing; scientists should recommend an ABC below OFL that accounts for uncertainties by increasing the buffers; and managers and scientists should evaluate the performance of management regularly with respect to adhering to the ACL in terms of preventing overfishing over multiple years.

In June 2008, NMFS published proposed guidance on how each Council should comply with new ACL and AM requirements. The proposed rule attempted to clarify the relationship between ACLs, maximum sustainable yield (MSY), optimum yield (OY), and other applicable reference points. The proposed regulations included details about how FMPs must prevent overfishing while achieving OY on a continuing basis. There were definitions of several new and existing terms. The rule also described what is required in an FMP related to National Standard 1 (prevent overfishing and rebuild overfished stocks). There is guidance on what defines a "fishery" and which stocks are and are not required to have ACLs and AMs. There are also detailed descriptions of exceptions to these requirements, guidance for international fisheries, and various requirements for describing data collection and estimation methods. The Council identified a number of issues with the proposed guidance as drafted, and some of those issues were addressed in the final rule.

On January 16, 2009, the final rule was published. Other than general editing, there were few substantive changes. First, the annual catch target (ACT) is now considered an accountability measure (AM) and is an option, rather than a required reference point. Consequently, there is no longer a required ACT control rule either. Second, the SSC role was clarified to read that the most relevant SSC recommendation is the ABC, not the ACL itself, which is more of a policy decision. Third, ecosystem component species are not required to be classified, which had been unclear in the proposed rule. Fourth, the description of the relationship of OFL to MSY, and ACT to OY was replaced with, "A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and, if used, ACT." This would supplant the previous description that required two control rules, one each for scientific and management uncertainty. Lastly, for in-season AMs, the final rule states that FMPs should include in-season closure authority giving NMFS the ability to close fisheries if it determines…that an ACL has been exceeded or is projected to be reached…to prevent overfishing. As the Council continues to understand the intent of the final rule, some revisions may be made to the following sections.

Below is a summary of relevant terms and requirements.

### 3.2.1 Definitions and integration of new terms with existing scallop reference points (PROPOSED ACTION)

The final rule includes definitions of several new and existing terms. This section summarizes what each required term is and clarifies what each terms means relative to the Scallop FMP. **The Scallop FMP information is in boldface.**

#### 3.2.1.1 Items pertaining to classification of stocks in an FMP identified in the final rule

The following items pertain to defining stocks in an FMP as identified in final rule FR Vol. 74 No. 11, pp 3178-3213:
Stocks in a fishery: Stocks identified in an FMP, including target stocks and non-target stocks. These may be grouped into stock complexes.

Target stock: Target stock is defined as "stocks that fishers seek to catch for sale or personal use, including "economic discards." **For the scallop FMP, the target stock is Atlantic sea scallops.**

Non-target species: Non-target species are defined as species that are caught incidentally during the pursuit of target stocks in a fishery, including "regulatory discard." They may or may not be retained for sale or personal use. Non-target species may be included in a fishery, and if so, should be identified at the stock level. Some may be identified as ecosystem component species.

The Scallop PDT conducted a preliminary analysis of bycatch in the scallop fishery based on results of the SBRM Amendment and Wigley et al. 2008. Based on that analysis, there are several species that have been caught as bycatch to some degree in the scallop fishery that may warrant further consideration in the future (See Section 3.2.3.11.1). However, the Council has determined that at this time non-target species with sub-ACLs will only be identified by the primary FMP. **Therefore, the only non-target species that has been identified for the scallop fishery is yellowtail flounder (all three stocks). No other FMPs have identified that a sub-ACL is necessary for the scallop fishery at this time. In addition, advice from NMFS is that species that are not managed under an FMP do not have to be identified as non-target species (i.e. protected resources).**

Ecosystem Component Species: To be considered an ecosystem component (EC) species, the species should: 1) be a non-target fish species (or stock), 2) not be determined to be subject to overfishing or overfished, 3) not be likely to become subject to overfishing or overfished, and 4) not generally be retained for sale or personal use. Occasional retention would not, in itself, preclude consideration of the species under EC classification. EC species may be (but are not required to be) included in an FMP for: data collection reasons, ecosystem considerations related to specification of OY of the associated fishery, considerations in the development of conservation and management measures, and/or to address other ecosystem issues. Councils should consider measures for the fishery to minimize bycatch of EC species.

**The PDT discussed several potential species (sponges, turtles and starfish), but none are recommended at this time.** Input from NMFS and in the Final Rule is that turtles would not qualify as an ecosystem component species because they are managed under the Endangered Species Act (ESA). The final rule states that the MSRA does not compel FMPs to include particular stocks or stock complexes, but authorizes the Councils or Secretary to make the determination of what conservation and management needs are and how best to address them. Further, it clarifies that while National Standard 9 requires that FMPs minimize bycatch and bycatch mortality, National Standard 6 requires that conservation and management measures to minimize costs and avoid unnecessary duplication; the final rule states that additional protections are afforded to some species under the Endangered Species Act, regardless of whether they are listed as stocks in a fishery.

Reclassification: Catch from a fishery should be monitored by the Council on a regular basis to determine if the stocks and species are appropriately classified in the FMP. **All catch in the scallop fishery has been and will continue to be monitored on a regular basis, so stocks and species could be reclassified as necessary.**

Stocks or species in more than one FMP: If a stock or species falls into this situation, Councils should choose a primary FMP in which status determinations criteria, reference points, etc. are established. The other FMPs should have consistent conservation and management measures. **This is consistent with how the Council manages different stocks in various FMPs; reference points for specific stocks are included in the primary FMP.**

Stock complex: Group of stocks sufficiently similar in geographic distribution, etc. such that the impact of management actions on the stocks is similar. **The scallop resource is considered one stock.**

Indicator stocks: A stock with measurable status determination criteria that can be used to help manage and evaluate more poorly known stocks within a complex. **There are no indicator stocks for the scallop resource, and the scallop stock is not currently identified as an indicator stock for anything else.**

Vulnerability: A combination of a stock's productivity and susceptibility to the fishery. **This concept is discussed related to scientific uncertainty and setting acceptable biological catch for the scallop resource.**

### 3.2.1.2 Items or descriptions to be addressed within the FMP pertaining to National Standard 1, as discussed in the final rule:

- ***MSY and SDC:***

Maximum Sustainable Yield (MSY): Largest long-term average catch or yield that can be taken from a stock (complex) under prevailing ecological, environmental conditions, and fishery technological characteristics, and the distribution of catch among fleets. $F_{msy}$ results in MSY.

$F_{msy}$ is the fishing mortality rate that, if applied over the long term would result in MSY. $B_{msy}$ means the long-term average size of the stock or stock complex that would be achieved by fishing at $F_{msy}$. Because MSY is a long-term average, it need not be estimated annually, but it must be based on the best scientific information available. When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential that can serve as reasonable proxies for MSY, $F_{msy}$ and $B_{msy}$, to the extent possible.

**During development of this action there was a benchmark assessment for this stock. SAW50 was completed in June 2010 and it recommended new reference points based on stochastic YPR model (Alternative 3.4.1.4). These results suggest that Fmsy = 0.38 and Bmsy = 125,358 mt. (276 million pounds) (estimated in 2009).**

Status determination criteria (SDC): Quantifiable factors (maximum fishing mortality threshold, overfishing limit, and minimum stock size threshold (or their proxies)) that are used to determine if overfishing has occurred or if the stock complex is overfished. It includes the maximum fishing mortality threshold, OFL, and minimum stock size threshold. SDC must be expressed in a way that enables the Council to monitor each stock, and determine annually, if possible, whether overfishing is occurring and whether the stock is overfished. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC.

**For the Scallop FMP the SDC for "overfishing" would depend on whether the fishery is at a fishing mortality above $F_{threshold}$ ($F$ = 0.38). The SDC for "overfished" would depend if the biomass is below $B_{threshold}$, or ½ Bmsy (62,679 mt. or 138 million pounds).**

Maximum fishing mortality threshold (MFMT): Is the level of fishing mortality, on an annual basis, above which overfishing is occurring. **For the Scallop FMP this corresponds to $F_{threshold}$ is defined as an $F$ rate of 0.38.**

Overfishing Limit (OFL): OFL means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock's abundance and is expressed in terms of numbers or weight of fish. OFL is an estimate of the catch level above which overfishing is occurring, corresponds to the level that jeopardizes the capacity of a stock to produce MSY on a continuing basis.

**For example, Framework 22 estimates that if a fishing level of 0.38 is applied to the biomass available in 2011, OFL will equal about 71 million pounds.**

Minimum sustainable stock threshold (MSST): MSST means the level of biomass below which the stock is considered to be overfished, and corresponds to the level that jeopardizes the capacity of the stock to produce MSY on a continuing basis. If the fishing mortality rate exceeds the MFMT, or the catch exceeds the OFL for one year or more, overfishing is occurring, and if the estimated stock size in a given year falls below the MSST, the stock is considered overfished. NMFS recommends that the MSST be ½ *Bmsy*, where *Bmsy* is the biomass expected to occur based on equilibrium yield-per-recruit calculations when the stock is fished at *Fmsy*.

**For the Scallop FMP, $B_{threshold}$ has been defined as ½ *Bmsy*. Therefore to update old terms with new terms, the following applies for the Scallop FMP, MSST = $B_{threshold}$ and both are equal to ½ of *Bmsy*. Currently *Bmsy* = 125,358 mt. (276 million pounds) (estimated in 2009) so ½ *Bmsy* = 62,679 mt. or 138 million pounds.**

- ***Optimum Yield (OY):***

OY: The amount of fish that will provide the greatest overall benefit to the Nation prescribed on the basis of the fishery MSY, reduced by relevant social, economic, or ecological factor.

OY Specification Analysis: Must be consistent with factors described in Final Rule. OY can be set very close to MSY if MFMT and current biomass estimates are known with a high level of certainty and management controls can accurately limit catch, assuming no other reductions are necessary for social, economic, or ecological factors. A list of items to include and how they should be expressed in setting OY can be found in the final rule (Section (e)(3)(v)).

- ***ABC Control Rule and Mechanisms for Specifying ACLs:***

ABC Control Rule: A specified approach to setting the ABC for a stock (complex) as a function of scientific uncertainty in the estimate of OFL and any other scientific uncertainty.

Catch: Total quantity of fish taken, including discard mortality.

Acceptable Biological Catch (ABC): The maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan. ABC can never exceed the OFL. The determination of ABC will consider scientific uncertainty.
**For the Scallop FMP, ABC will be set at a catch amount produced by a fishing mortality equivalent to having a 25% chance of exceeding OFL. This is based on a recommendation of the SSC using quantitative and qualitative analyses of scientific uncertainty completed by the Scallop PDT. See Section 3.2.3.7 for details.**

Annual Catch Limit (ACL): Annual amount of catch over which accountability measures are triggered. ACL can be equal to but can never exceed the ABC. ACL should be set lower than the ABC when necessary due to uncertainty over the effectiveness of management measures.
**For the Scallop FMP, ACL = ABC; therefore the catch that corresponds to a fishing mortality level that has 25% chance of exceeding OFL.**

Sector-ACLs: Council may, but isn't required, to divide an ACL into sector-ACLs. Sectors include gear groups within a fishery. Sector-specific ACLs may be necessary if the different sectors differ in their degree of management uncertainty so that appropriate AMs can be developed for each sector. **The Scallop FMP will have two sector ACLs: one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC).**

State/federal ACLs: The final rule states that "for stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments should include an ACL for the overall stock that may be further divided. For example, the overall ACL could be divided into a Federal-ACL and State-ACL." However, Federal management is limited to the portion of the fishery under Federal authority.

Annual Catch Target (ACT): An amount of annual catch of a stock or stock complex that is the management target of the fishery and accounts for management uncertainty. A stock or stock complex's ACT should usually be less than its ACL.
**For the Scallop FMP, use of an ACT is recommended as a "proactive" in-season accountability measure to help ensure the ACL is not exceeded. There will be separate Acts for the two sub-ACLs: one for the limited access fishery and one for the general category fishery. Both are set below the sub-ACL to account for management uncertainty. See Section 3.2.3.8 for details.**

ACT Control Rule: Approach to setting the ACT for a stock or stock complex such that the risk of exceeding the ACL due to management uncertainty is acceptably low.

This action is not specifying a specific ACT control rule, it is not required.

- ***Accountability Measures (AMs):***

AMs: Management controls that prevent ACLs or sector-ACLs from being exceeded (in-season AMs), where possible, and correct or mitigate overages if they occur.

In-season AM: Includes (but is not limited to) an ACT, closure of a fishery, closure of a specific area, reductions in effort, or changes in trip size or bag limits based on in-season monitoring of the fishery. For fisheries without in-season management control, AMs should utilize ACTs that are set below ACLs so catches do not exceed ACL.

AMs for when ACL is exceeded: AM that is triggered and implemented as soon as possible to correct the operational issue that caused the ACL overage. This can include modifications of in-season AMs and/or overage adjustments. If catch exceeds the ACL more than once in four years, the system of ACLs and AMs should be re-evaluated.

AMs based on multi-year data: For fisheries without annual data upon which to base AMs, AMs could be based on comparisons of average catch to average ACL over a 3-year moving average period, or some other period based on an appropriate analysis.

State-Federal AMs: FMPs must have, at a minimum, AMs for the Federal portion of the state-federal fisheries. AMs could, for example, include closing the EEZ when the Federal portion of the ACL is reached.

**The Scallop FMP has alternatives for in-season AMs and AMs for when ACLs are exceeded. Use of an ACT is recommended as a "proactive" in-season accountability measure to help ensure the ACL is not exceeded. The FMP also includes several other "reactive" AM alternatives if the fishery exceeds sub-ACLs. See Section 3.2.3.9.**

### 3.2.2 Summary of old and new terms and how they will be integrated in Scallop FMP

Although the MSRA has introduced many new terms, they are not vastly different than those currently used in the Scallop FMP. The table below attempts to link old and new terms together and defines what these terms stand for and what values will be associated with the new required terms. Many of the same values have been used in the Scallop FMP to determine if overfishing has occurred and if the stock is overfished.

**Table 3 – Summary of old and new terms with definitions and associated values**

| Old Term | New Term | Definition | Value for Scallop FMP |
|---|---|---|---|
| MSY | MSY | Largest long-term average catch or yield. Results from applying $F_{msy}$. | $F_{msy} = F_{max} = 0.38$ |
| $F_{threshold}$, $B_{threshold}$ | SDC | Quantifiable factors used to determine if overfishing has occurred and if stock is overfished | SDC for Scallop FMP is $F_{threshold}$ of 0.38 and $B_{threshold}$ of 62,679 mt. |
| $F_{threshold}$ | MFMT | Level of fishing mortality above which overfishing is occurring. | MFMT = $F_{threshold}$ = 0.38 |
| $B_{threshold} = ½\ B_{max}$ and $B_{max} = B_{target} = B_{msy}$ | MSST | Level of biomass below which stock is considered overfished. | MSST = $B_{threshold}$ = ½ $Bmsy$ |
| | OFL | Annual amount of catch above which overfishing is occurring, results from applying MFMT or $F_{threshold}$ to stock abundance. | OFL = 71 million lbs. for 2011 |
| OY | OY | MSY reduced by relevant social, economic, and ecological factors. | OY = ACL |
| | ABC | Maximum catch recommended for harvest. Can never exceed OFL and should consider scientific uncertainty. | ABC set 25% lower than OFL (SSC recommendation) |
| OY | ACL | Annual amount of catch over which accountability measures triggered. ACL can equal but never exceed ABC | ABC = ACL |
| | Sector ACL | Overall ACL can be divided into sub-ACLs if differences in degree of management uncertainty. | Scallop FMP will have 2 sub-ACLs: one for limited access (LA) and one for limited access general category fishery (LAGC). ACL = LA ACL + LAGC ACL |
| Catch from $F_{target}$ | ACT | Amount of annual catch that is the management target and accounts for management uncertainty. | Scallop FMP will have 2 ACTs: LA ACT will be set at F level with 25% chance of exceeding ABC and LAGC ACT will be set equal to LAGC sub-ACL. |

### 3.2.3 Alternatives under consideration for implementing ACLs in the Scallop FMP

#### 3.2.3.1 No Action

If this option is selected, a process for implementing Annual Catch Limits (ACLs) will not be adopted in this action.

#### 3.2.3.2 ACL structure (PROPOSED ACTION)

The new ACL related terms required under MSRA described in Table 3 will be implemented and the structure will be applied based on the flowchart in Figure 1. The overall ACL will be divided into two sub-ACLs: one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC). Each sub-ACL will have an associated ACT.

There are specific buffers proposed between these required terms. A buffer for scientific uncertainty between OFL and ABC and another buffer for management uncertainty between both sub-ACLs and sub-ACTs for the limited access and general category fisheries. Figure 3 summarizes that ABC will be set at X% below OFL and ABC=ACL (See Section 3.2.3.7 for the details of the buffer for scientific uncertainty). The scallop ACL will be divided into 2 sub-ACLs (LA and LAGC). Each sub-ACL will have associated sub-ACTs and the buffer between the LA ACL and ACT will be Y%, and the buffer between the limited access general category ACL and ACT will be set at Z% to account for differences in management uncertainty. Section 3.2.3.8 summarizes the buffers for management uncertainty for these two sub-ACLs.

#### 3.2.3.3 Northern Gulf of Maine ACL (PROPOSED ACTION)

In addition to the ACL for the directed scallop fishery (LA and LAGC), a separate NGOM ACL will be specified and will have a separate hard-TAC. Because resource in the NGOM is currently not incorporated in the overall assessment of the scallop resource, the ACL for this area can be treated separately as long as it is within the overall OFL for the resource. Therefore, an estimate of catch from this area will be added to the OFL and later removed before setting ABC and the overall ACL for the scallop fishery. It should be noted that NGOM survey data is being incorporated into the stock assessment for 2010 (SAW 50) so this may change in the future.

Amendment 11 to the Scallop FMP implemented a hard-TAC for vessels that qualify to fish under a limited access NGOM permit. That action specified that the Scallop PDT will recommend a hard-TAC for the federal portion of the scallop resource in the NGOM using historical landings until funding is secured to undertake a NGOM stock assessment.

Framework 19 to the Scallop FMP is the first action that set a hard-TAC for this area. The TAC was set to be both 70,000 pounds in 2008 and 2009. This amount is based on the average VTR landings from 2000-2006 from federal waters outside of EFH and groundfish mortality closed areas. The rationale behind this value was that there is uncertainty about the resource in the NGOM as well as landings data, so the PDT discussed removing 80% from the average to account for this uncertainty. However, it was also acknowledged that some future landings will likely come from state waters, so the PDT recommended that no reduction be taken from the average landings amount at this time.

It should be noted that in 2008 only 14% of the hard-TAC was harvested. There could be many reasons for this, but it does not seem that exceeding the hard-TAC is likely. Between March 1, 2009 and July 19, 2009 about 8% of the TAC was harvested. This is primarily a winter fishery so landings are expected in increase, but are not expected to come close to the 70,000 pound limit. <u>Therefore, current estimate of NGOM ACL is 70,000 pounds.</u>

#### 3.2.3.4 Other sources of scallop fishing mortality (PROPOSED ACTION)

There are three additional sources of fishing mortality that will be taken into account before setting OFL. Mortality from discards (in all fisheries), incidental catch, and catch by vessels with state only scallop permits in state waters will be removed before setting OFL. Sea scallops are sometimes discarded on directed scallop trips because they are too small to be economically profitable to shuck or because of high-grading during access area trips to previously-closed areas (discard mortality). Scallops are also caught and either landed or discarded in fisheries targeting finfish and other invertebrates (incidental catch mortality). Currently it is estimated that dead discard mortality equals 370,373 pounds, 6.8 million pounds for incidental catch mortality (5.5 million pounds from GB and 1.3 million pounds for the MA). Both these estimates are from the recent scallop assessment using 2006 data. Incidental mortality was unusually high in 2006 because most of the fishing occurred in Georges Bank (which is assumed to have much higher incidental M than the Mid-Atlantic). The third source of additional scallop fishing mortality is from landings in state waters by vessels without federal scallop permits; for fishing year 2008, the current estimate of this catch is over 160,000 pounds. These estimates will be periodically re-evaluated in scallop assessments and can be adjusted. The PDT will account for these sources of mortality when setting OFL. Each source of mortality is described in more detail below.

- *State Waters*

The Council does not have the authority to set AMs on state fisheries and vessels; as such there are no ACLs or AMs for harvest in state waters from vessels that have state permits only. There are only a handful of states that have state scallop permits, and catch from these vessels is tracked by individual states and ASMFC. ASMFC has provided an estimate of catch by state only permitted vessels. <u>The estimate is just over 160,000 pounds for fishing year 2008, and this value will be re-evaluated in the future if catch amounts change.</u>

**Table 4 – Summary of state water catch by vessels without a federal scallop permit**

| State | Meat (pounds) | Meat (metric tons) |
|---|---|---|
| ME[1] | 121,929.30 | 55.31 |
| MA[2] | 26,430.16 | 11.99 |
| NH | * | * |
| NY | * | * |
| RI[2] | 12,905.47 | 5.85 |
| State Total | 161,264.93 | 73.15 |
| Coastwide Total (ME-VA) | 52,344,986.18 | 23,742.06 |
| Percentage | 0.31% | 0.31% |

**Less than 500 lbs*

[1] *Data pulled from state harvester reports.*

[2] *Data pulled from the ACCSP SAFIS database.*

Harvest from these states will be taken into account in the overall ACL flowchart: estimated catch will be added into the overall OFL and removed again before the ABC/ACL is identified. The PDT is not sure if NMFS can require states to report catch from state permitted vessels, but it was identified as an issue in terms of when and how catch from this source will be available and integrated into the overall ACL process. Catch from vessels with federal permits that fish in state waters will be included in the overall estimate of OFL because these vessels are required to report landings to NMFS because they have a federal permit.

- *Discards*

Mortality from discards is already taken into account during the development of OFL because the YPR relationships already include a discard estimate. A 20% mortality of these discards is also incorporated into the SAMS and YPR models. Incidental mortality (mortality on scallops impacted by gear while fishing but not brought on deck) is also included in the OFL estimate. The 2006 estimate for discard mortality is 370,373 lbs; the incidental mortality estimate for 2006 for Georges Bank is 5.5 million lbs, and for the Mid Atlantic is 1.3 million lbs. Similar to how catch from state waters permitted vessels will be accounted for, all mortality from discards and incidental mortality will be added to the estimate of OFL and later removed from OFL to clarify that this source of mortality is accounted for in the process.

Current estimate of mortality from discards is 370,000 pounds, and the estimate of incidental catch mortality (mortality on scallops impacted by gear while fishing but not brought on deck) is 6.8 million pounds. These values together add up to approximately 7.17 million pounds (based on 2006 data). These have been updated and were presented to the SSC in August 2009. The updated estimate of mortality from dead discards and incidental catch is about **7.4 million pounds.** These values will be re-evaluated in future assessments.

- *Incidental Catch*

There are roughly 240 limited access general category incidental catch permits that are allowed to catch up to 40 lbs per trip; this accounts for a very small percent of overall catch. It was decided that even if this component of the fishery grew to a more substantial size, total catch from this permit category would still be within the difference between ACT and ACL. *The PDT recommended that this component of the fishery should not have a sub-ACL at this time; but recommended that consideration of new sub-ACLs should be added to the list of frameworkable items.* That way, in a few years, if a re-evaluation of this permit category shows that catch has increased substantially a sub-ACL with associated AMs could be considered.

Current estimate of catch from this component of the fishery is **50,000 pounds**. Amendment 11 set that as a target TAC that can be adjusted up or down. It is a target TAC so it is not monitored real time and the fishery does not close if the target is reached, but this value will be re-evaluated in the future and modified if necessary. These vessels are now required to have an incidental permit and report catch of scallops, which should improve catch estimates from this sector.

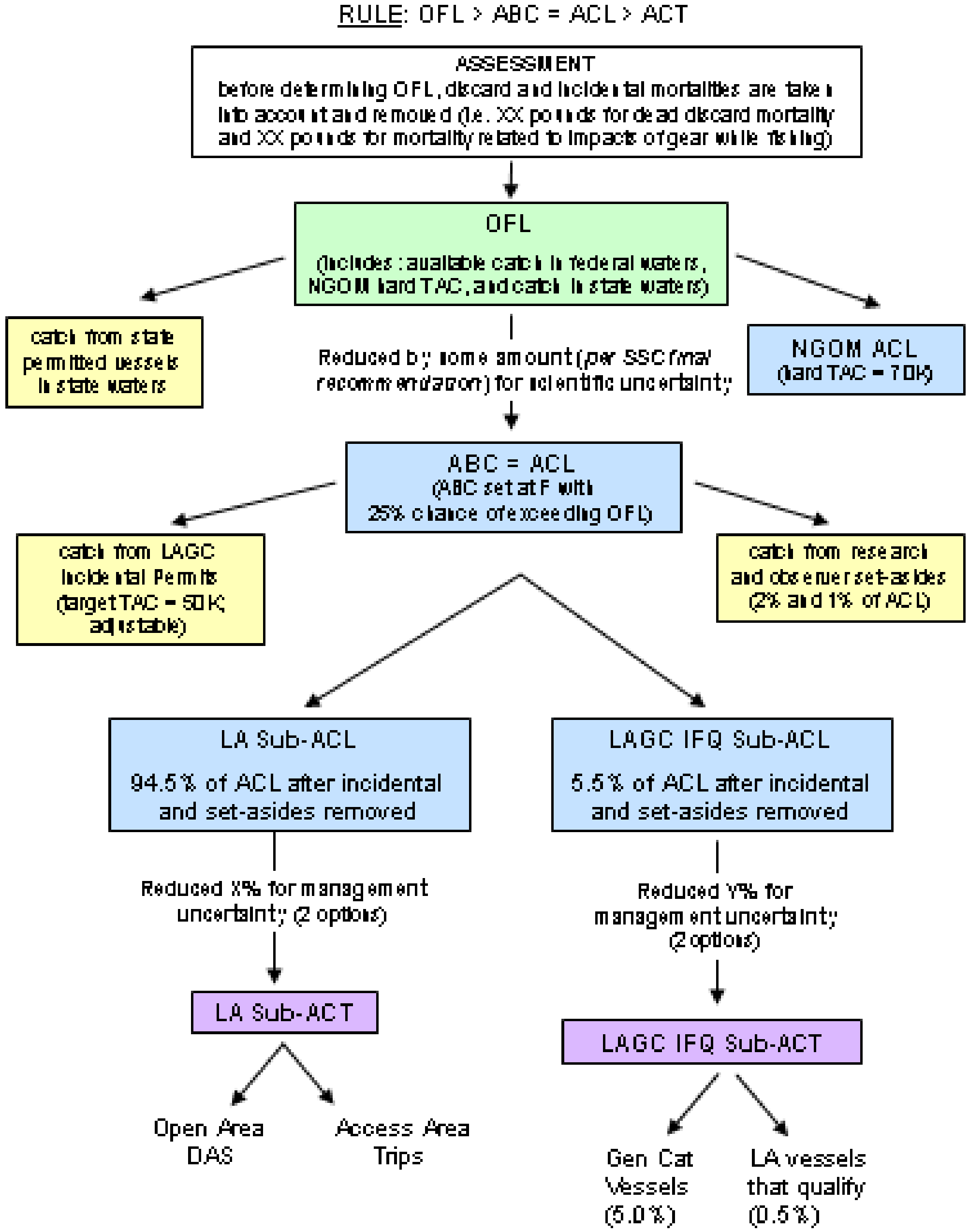
#### 3.2.3.5 ACL sub-components (PROPOSED ACTION)

An overall ACL will be applied to the entire scallop fishery with two sub-ACLs for the LA and LAGC fisheries (See Figure 1). Figure 2 is an example of how this structure will work as proposed, using FY2011 estimates. Mortality from discards, incidental catch, and catch from state permitted vessels will be accounted for in setting OFL (OFL will be reduced by estimates of catch from these sources of mortality). Each sub-ACL will have an associated ACT with separate accountability measures (AMs). Before sub-ACLs are set, an estimate of mortality from incidental catch permits will be removed. This incidental catch estimate is currently 50,000 pounds. Catch associated with the research and observer set-aside programs will also be removed before the ACL is divided into two sub-ACLs. One percent of total projected catch in all areas will be set aside to help defray the cost of observer coverage even though general category vessels will still be exempt from the requirement to fund observers in open areas if required to carry one.

The primary reason there will be two ACLs is so that AMs can be applied to the component of the fishery responsible for the excess catch. Thus, one component of the fishery will not shut another out or have to "pay for" an overage they did not cause.

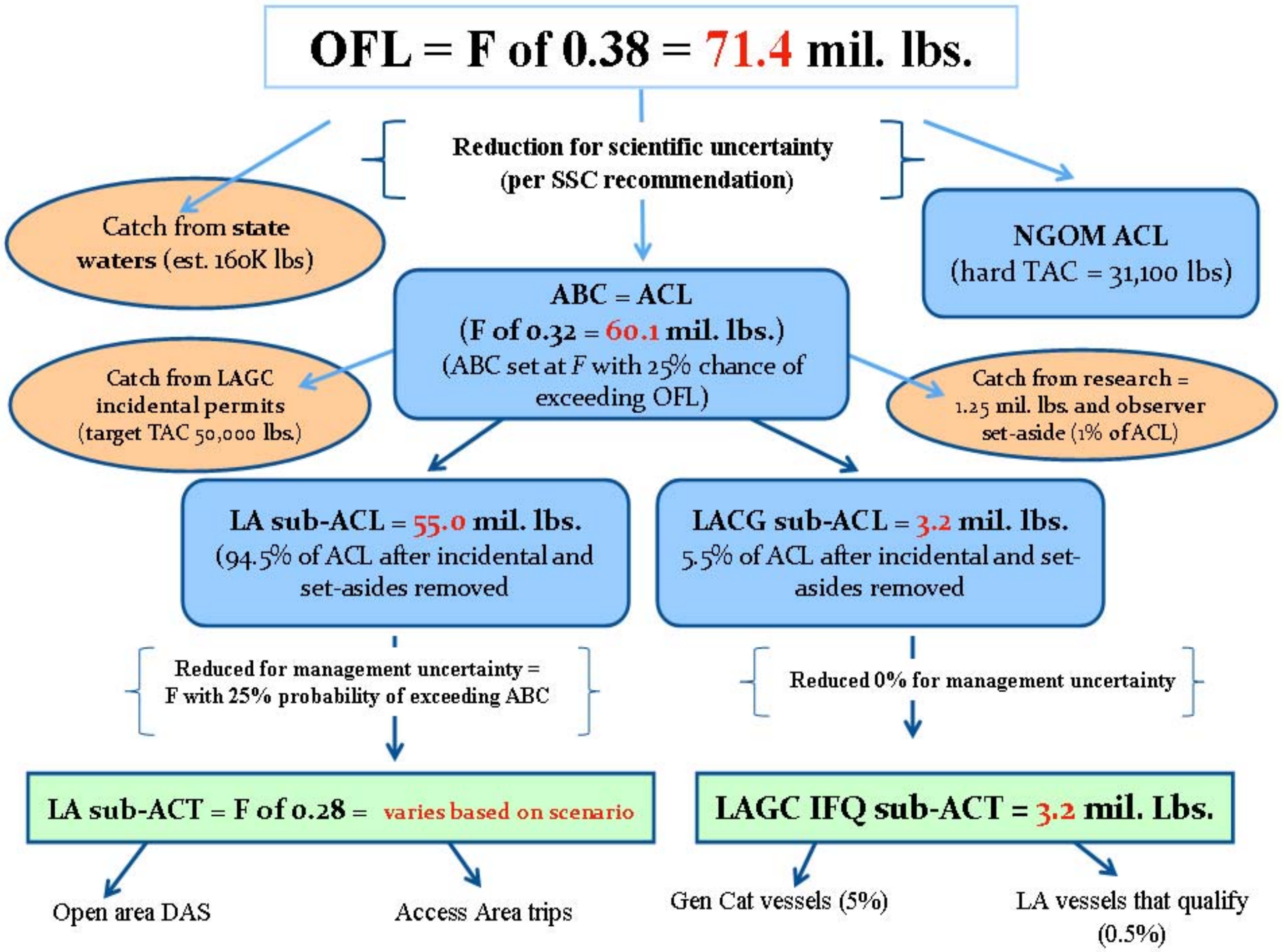
It needs to be clarified that this action will modify the allocation decision made in Amendment 11 to allocate 5% of the total projected catch to the general category vessels that qualify for a LAGC permit, 0.5% to limited access vessels that qualify for a LAGC permit, and 94.5% for limited access vessels. The intent of Amendment 11 was to allocate 5% to the general category fishery, and since that action did not anticipate ACLs, that allocation decision should be in terms of ACL, not ACT. Therefore, the allocation decision will be applied before buffers for management uncertainty are applied since currently the two fisheries have different levels of uncertainty. Specifically, general category vessels will be allocated 5.5% of the total ACL (5% for LAGC vessels and 0.5% for LA vessels that also qualify for a LAGC permit). Because the buffers for management uncertainty for the two fleets are likely to be different based on decisions made in Section 3.2.3.8, the final allocations to the different fisheries, or ACTs, will not be based on the same percentages. Specifically, the LAGC ACT will likely not be 5% of the total ACT for the fishery.

**Figure 1 - Recommended flow chart for ACLs for the scallop fishery.**




Based on the final decisions made by the Council in this action, the flowchart above has been populated with actual values for the 2011 fishing year, based on the most recent estimated used to set management measures in Framework 22. Figure 2 below includes the proposed action to the ACL related measures including where to set ABC, sub-ACLs, sub-ACTs, and where to account for set-asides, NGOM catch, and other sources of mortality including dead discards and incidental catch.

**Figure 2 – Example of how proposed ACL measures would work after Amendment 15 is approved, using FY2011 estimates considered in Framework 22**




### 3.2.3.6 Placement of terms and buffers for uncertainty

The MSRA discusses that in setting catch levels the Council needs to recognize and account for uncertainty in setting and achieving harvest levels. Overall the levels of scientific and management uncertainty in the Scallop FMP are relatively low. Multiple surveys and methods are used to assess the scallop resource on an annual basis. A benchmark assessment is completed every three years, and the Scallop PDT evaluates the status of the resource each year. Section 3.2.3.7 below summarizes the scientific uncertainty in estimating OFL and how certain the estimate of ABC is with respect to preventing overfishing. **Based on a recommendation from the SSC, ABC will be set corresponding to a fishing mortality that has 25% chance of exceeding OFL, as depicted in Figure 3.**

For the Scallop FMP, the Council has decided to use ACTs an in-season accountability measure. What that means is that management uncertainty will be accounted for as the buffer between ACL and ACT, rather than the difference between ABC and ACL if no ACT was used. Therefore, the Scallop FMP will use an overall approach of OFL>ABC=ACL>ACT. ABC will equal the ACL because management uncertainty is accounted for between the ACL and ACT and scientific uncertainty is accounted for between OFL and ABC. Keep in mind that the overall ACL will be divided between the limited access and general category sectors and each ACL will have an associated ACT.

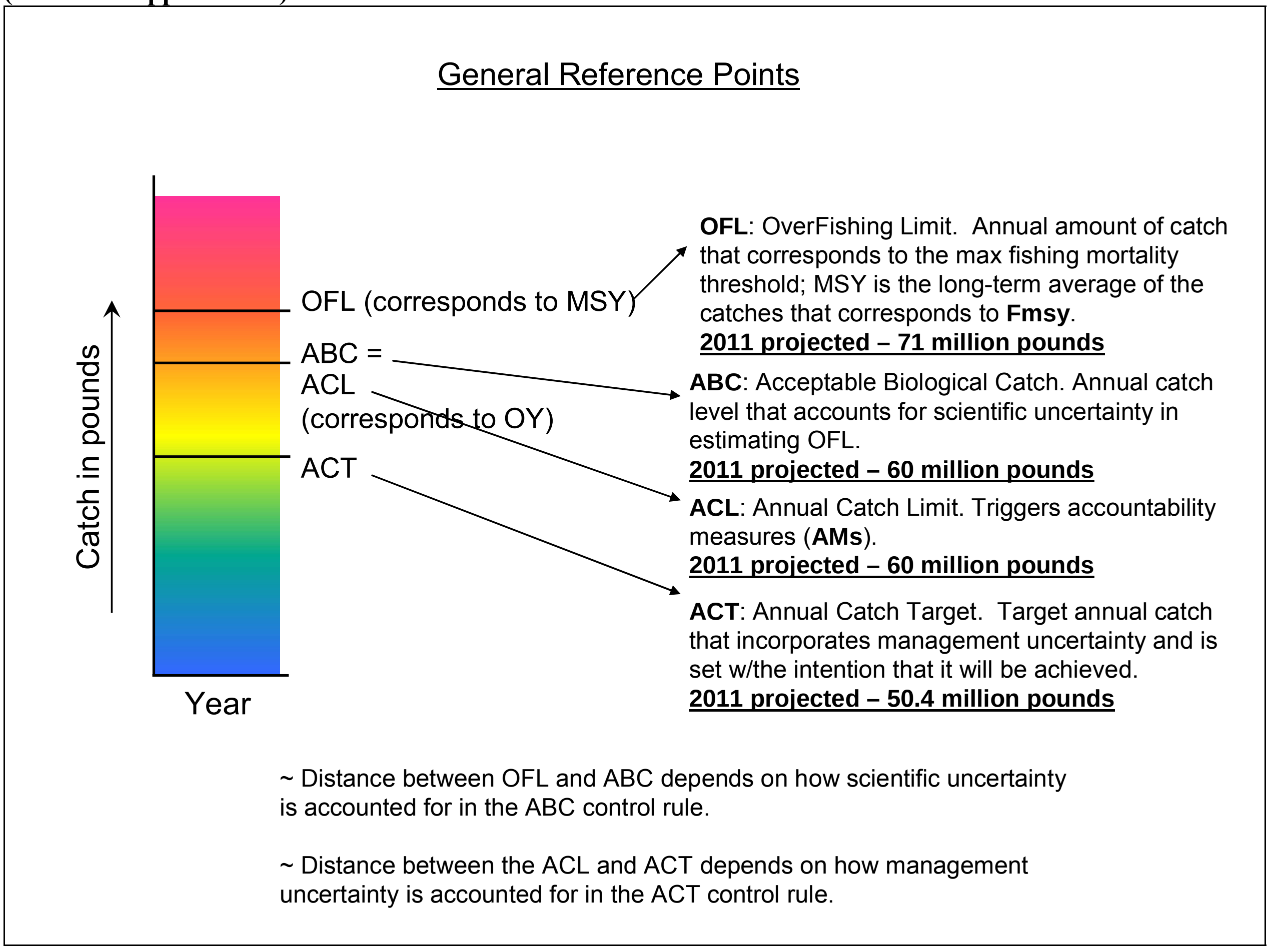
The Scallop FMP has decided to go with 1) OFL>ABC=ACL>ACT for three main reasons:

1. AMs are likely hard TACs or something like them that restrict fishing by season and/or area. Hard TACs can lead to derby fishing having negative impacts on the fishery. Derby fishing has all sorts of negative consequences such as increased bycatch, lower price for product due to spikes in supply, loss of yield if fishing shifts to seasons with lower meat weights, etc. One goal of this FMP is stable and consistent landings. Markets have been developed in the US and abroad based on a steady supply of fresh scallops being available all year long.
2. In addition, an ACT would help avoid localized overfishing; with some scallops locked in closed areas that remain unavailable to the scallop fishery, fishing mortality is higher in open areas. If open area DAS are set too high, there is potential for localized overfishing.
3. The public is more likely to perceive success. The scallop industry has told the Council they would support setting fishing allocations at ACT below ACL so that there is not a misunderstanding in the public that the scallop resource is not managed responsibly. If AMs are not triggered, the public is more confident that management is working. There are a variety of reasons why a fishery could exceed a fishing target, including some that are not the control of the fishery or caused by fishing, so if a fishery is under or over a target the ramifications are different than if the fishery is under or over an ACL.

Overall, by having an ACT as an in-season AM, the management plan can "address and minimize both the frequency and magnitude of overages" by setting management measures below ACL. It may be more beneficial to catch less than the resource can biologically support, compared to catching the maximum and running a greater risk of triggering AMs that would cause derby fishing. Most AMs the Council has developed so far have derby effects and that is not a good way to manage the scallop fishery. It should be noted that this amendment also includes reactive AMs, so if both the ACT and ACL are exceeded, other AMs would be triggered that would reduce future catch to account for any overages above the ACL.

There is some management uncertainty in this fishery, but it is relatively low because the majority of the fishery is managed under output controls that cap catch (access area trips have a possession limit, and the general category fishery is managed under IFQs). Actual catch has exceeded projected catch for a variety of reasons in the past, but the estimates are getting closer. There is reason to believe estimates will become even more accurate now that the general category fishery is under IFQs, more access area trips are allocated with a possession limit per trip, more surveys are being conducted, and more is known about parameters used to estimate biomass. In addition, if general monitoring programs improve, it may be feasible to reduce the buffer between ACL and ACT. Section 3.2.3.8 summarizes the level of management uncertainty in this fishery. Because the limited access and general category vessels are under different management regimes with different levels of management uncertainty, they each have a separate buffer between their sub-ACLs and sub-ACTs. **In summary, there will be two options considered for the buffer between the sub-ACL and sub-ACT for the limited access fishery and two options considered for the buffer between the sub-ACL and sub-ACT for the limited access general category fishery.**

**Figure 3 – Relationship of ACL related terms for Scallop FMP using 2011 estimated biomass as an example (values are approximate)**




The actual catch amounts in pounds that correspond to these acronyms will be determined in each framework that sets specifications, but the distance between each term (percentage amounts) will remain the same unless a future framework or amendment action considers changing them. However, the PDT recommends that the Council still have the authority to set the overall fishing mortality target (ACT) lower than the selected buffers if there is a justified reason. In the past the Council has set the fishing target below $F_{target}$, and it is understood that the Council would still have the authority to set management measures that are more precautionary than ACT if warranted. However, if the Council wanted to set management measures above ACT, that action would have to also consider revising ACT to a higher value closer to ACL.

Once these ACL measures are approved, it is assumed that similar rationale would be used to determine the distance between reference points in the future in actions following Amendment 15.

### 3.2.3.7 Description of scientific uncertainty (PROPOSED ACTION)

Scientific uncertainty stems from incomplete or inaccurate data, model error, and environmental variation (Rosenberg et al. 2007). It affects estimates within assessments, including mortality, growth rates, and recruitment (SARC 32). Scientific uncertainty can arise from variability in growth rates, differences in aging techniques, and also statistical errors (SARC 39). Rosenberg and Restrepo (1994; as quoted in SARC 32) identified 5 types: measurement error (in observed quantities), process error (or natural population variability), model error (mis-specification of assumed values or model structure), estimation error (in population parameters or reference points, due to any of the preceding types of errors), and implementation error (or the inability to achieve targets exactly for whatever reason). Implementation error falls generally under the realm of management uncertainty, discussed in the next section.

In order to identify the appropriate buffer between OFL and ABC, the Scallop PDT evaluated the level of scientific uncertainty in two ways. First, a qualitative evaluation of the various biological parameters was completed in terms of the overall level of uncertainty related to each parameter and the impact of that uncertainty on the overall assessment (Section 3.2.3.7.1). Second, as requested by the SSC, the PDT conducted a quantitative analysis of scientific uncertainty (Section 3.2.3.7.2). Specifically, a quantified estimate of uncertainty in the estimate of OFL and MSY was conducted.

**Based on a combination of these analyses, the SSC recommended that ABC be set at the catch that corresponds to a fishing mortality level that has a 25% chance of exceeding OFL.**

#### 3.2.3.7.1 Qualitative analysis of scientific uncertainty

The current stock assessment determines biomass, recruitment, biological reference points, and fishing mortality. Each has its own associated uncertainty. The most recent scallop assessment (2007) used a size-structured forward projecting assessment model (CASA), which produced more accurate results then previous models (rescaled F approach). The most recent assessment took into account more sources of data and updated research results to provide a more precise and less bias estimate.

The sources of data include: the NEFSC dredge survey, the winter bottom trawl and SMAST small camera video surveys, commercial landings, shell height measurements for landed scallops from port and sea sampling (observer data), commercial landings per unit of effort, and growth increment data from growth rings on scallop shells. The recent assessment used new growth data for the first time, which indicate that Mid-Atlantic sea scallops do not grow as large but reach their maximum size faster than previously assumed, while the Georges Bank scallops have growth similar to the previously estimated growth curve. These new growth data estimates have some error associated with them. Lastly, new shell height/meat weight relationships for survey and commercial catches were used. The shell height-meat weight relationships for catches were adjusted to account for shucking practices, water absorption and transport, as well as seasonal patterns in meat weights during each year.

While the scallop stock assessment is a relatively data rich assessments there are various sources of uncertainty that are highlighted in recent assessment reports:

- There are relatively small, but imprecisely known amounts of sea scallop biomass occur in areas outside the regularly surveyed NEFSC shellfish strata (NEFSC Reference Doc. 06-20), which can lead to biological uncertainty in the assessment. However, landings from regions outside Georges Bank and the Mid-Atlantic are comparatively minor (NEFSC Reference Doc. 06-20).
- Spatial averaging of the overfishing definition over the closed, open, and access areas leads to uncertainty about the status determination of whether overfishing is occurring (NEFSC Reference Doc. 06-20); it is known that fishing levels in the open areas are high due to the large amount of biomass in the closed areas. This allows a higher F in open areas – potential localized overfishing because averaged with no fishing on resource in closed areas.
- The ability to link dealer reports and vessel trip reports in data processing is reduced by incomplete data reports and other problems, which make it difficult to precisely estimate catches and fishing effort, and to prorate catches and fishing effort among areas and gear types (SAW 39).
- Regulatory and reporting changes cause uncertainty while comparing trends in fishing effort and catch rates before and after 1994 (SAW 39).

The scallop assessment is generally conducted about every three years. Reference points are updated and new information about catch, recruitment and other factors are evaluated. Various parameters are used in the assessment and the values used are based on the best available science.

Below is a description of the parameters used in the assessment including the most recent research data used to produce each parameter and if discussed, the degree of uncertainty associated with each parameter and the importance of that parameter on the overall assessment of the scallop resource. References included in the following assessment parameters were cited from the 45th SAW report. <u>The Scallop PDT has evaluated the level of uncertainty on a scale of 0-4 (*zero is no uncertainty, 1= little uncertainty, 2= some uncertainty, 3= fairly uncertain, and 4=completely uncertain*) as well as the importance or effect of that parameter on the overall assessment of the scallop resource on a scale of 1-3 *(1= low, 2=moderate, and 3=high effect).*</u> The second score is a way to qualify the uncertainty of each parameter in terms of importance or effect, a value was given to describe the sensitivity of each parameter – whether the level of uncertainty has a small or large impact on the overall assessment of the resource.

The PDT does point out that there is a big difference between uncertainty and variability that should be kept in mind. Variability is generally included in modeling, but even if you are certain, the variability can affect forecasting. For example, the scallop assessment is relatively certain about growth, but there is still variability in yield because the seasonality of the fishery is unpredictable. There is variability through the year and between years, which will affect forecasting.

- **Growth**

Sea scallop growth is traditionally modeled using the von Bertalanffy growth equation. Previous sea scallop assessments used the growth curves estimated by Serchuk et al. (1979), but reviewers expressed concern about a lack of recent growth information. Subsequently, a growth study was performed using shells collected during the 2001-2006 NEFSC scallop surveys. The growth curves based on these new data have lower $L_\infty$ and higher *K* values than in previous estimates for both the Mid-Atlantic and Georges Bank (Table 5).

**Table 5 - Growth parameters for Atlantic sea scallops**

| Source | Region | $L_\infty$ | SE | *K* | SE |
|---|---|---|---|---|---|
| New | | | | | |
| | Mid-Atlantic | 131.6 | 0.4 | 0.495 | 0.004 |
| | Georges Bank | 146.5 | 0.3 | 0.375 | 0.002 |
| Serchuk et al. (1979) | | | | | |
| | Mid-Atlantic | 151.8 | | 0.2997 | |
| | Georges Bank | 152.5 | | 0.3374 | |

This was identified by PDT members as the primary, most important parameter in terms of having an impact on the overall estimate of biomass. If it is misestimated, the ramifications are consequential. It can cause an over- or under-estimation of available biomass and is particularly important for forecasting. For example, growth was overestimated in Hudson Canyon and the three year projection for that area was much higher than reality – the biomass was much lower than originally projected. There is a standard error associated with growth, which is a built-in measure of uncertainty.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 2 Importance/effect on assessment = 3**

- **Maturity and fecundity**

Sexual maturity commences at age 2, although individuals younger than 4 years may contribute little to total egg production (MacDonald and Thompson 1985; NEFSC 1993). All sea scallops >40 mm are considered mature individuals and annual fecundity increases quickly with shell height (MacDonald and Thompson 1985; McGarvey et al. 1992). Spawning generally occurs in late summer or early autumn, although there is evidence of spring and autumn spawning in the Mid-Atlantic Bight (DuPaul et al. 1989) and limited winter-early spring spawning on Georges Bank (Almeida et al. 1994 and Dibacco et al. 1995).

A PDT member explained that this has little effect on the outcome of the assessment; in fact, because there is so little data on this parameter, it is not used in the assessment. There is uncertainty associated with the shell height / egg number relationship because it is based on a study in Canada, which may not be exactly fitting for Georges Bank or the Mid-Atlantic; further, the relationship may vary annually. So, there is uncertainty with this parameter, but it is not incorporated in the assessments as far as estimates are concerned – it is just used to ensure there is enough spawning.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 2 to 3 Importance/effect on assessment = 1**

- **Shell height / Meat weight relationship**

Shell-height/meat-weight relationships allow conversion from numbers of scallops at a given size to equivalent meat weights. NEFSC (2001) obtained blended estimates used in the last two estimates from the combination of the SH/MW relationships from Serchuk and Rak (1983) and the NEFSC (1999) based on meat weights that were taken on land (after being frozen or brought in live). The NEFSC collected new SH/MW data during the annual sea scallop surveys during July, 2001-2006, from meats that were weighed at sea just after shucking. The new data give slightly higher predicted meat weights at a given shell height than NEFSC (2001). In the recent assessment, depth-adjusted SH/MW relationships were used to calculate survey biomass information, but traditional relationships were used in the CASA and SAMS models in which depth is not explicit.

Observer and landings data were used to adjust the survey SH/MW relationships for use with the commercial catch because the meat weights for landed scallops may be different from those predicted based on the NEFSC survey (because of time of year collected, shucking, water uptake during storage, area collected). Gains in meat weight during storage on ice are highly variable and uncertain, but for this assessment meats were assumed to have gained by 3% to account for water absorption during storage and transport when accounting for numbers landed (DuPaul 1990).

Both Georges Bank and the Mid-Atlantic showed a drop in meat weights between August and October, coinciding with the September-October spawning period. Mid-Atlantic meat weights were less than predicted based on summer sea scallop survey relationships in all months. The highest meat weights were in July. Estimates of meat weights for Georges Bank for February though May are uncertain because they were based on a limited number of observed trips and samples. Average weight of individual sea scallops in the catch was calculated based on size composition, shell-height meat relationship, annual anomaly, and adjustment for water absorption.

A PDT member explained that the SH/MW relationship has a moderate effect on the outcome of the assessment and there is a little uncertainty associated with it due to inter-annual variation. There is also water gain during transport and only a small number of observed trips are used to estimate the shell height/meat weight relationships used (in comparison to the overall fishery). However, it was pointed out that these two issues have a minor contribution to uncertainty. Overall, our understanding of this relationship is high, but it varies inter-annually, so there is some uncertainty due to the moderate variability.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 2 Importance /effect on assessment = 2**

- **Natural mortality**

Natural mortality estimates are based on surveys of clapper data. Based on previous assessments (NEFSC 2001, 2004), the natural mortality rate for sea scallops in this assessment was assumed to be $M = 0.1\ y^{-1}$ for scallops with shell heights greater than 40 mm. The $M$ estimate is based on ratios of clappers to live scallops in survey data (Merrill and Posgay 1964). Clappers are shells from dead scallops that still have both halves connected by the hinge ligament. MacDonald and Thompson (1986) suggested that natural mortality increases at larger shell heights. Clapper ratios for Mid-Atlantic and Georges Bank are lower than previously calculated by Merrill and Posgay (1964), but it is unclear whether this is due to lower natural mortality, differences in the clapper separation rate, or changes in clapper catch-ability due to the change from an unlined to a lined dredge. Georges Bank has seen recent increases in clapper ratios, which may represent episodic mortality events or could be related to the increases in size/age in the Georges Bank stock. Larger size classes tend to have higher clapper ratios, but it is unclear whether this is due to increased separation time of larger clappers or to an increased natural mortality as scallops ago, or a combination of both (NEFSC 2004).

There is better information in the scallop fishery than in most other fisheries because of the ability to assess natural mortality through assessing clappers' state of decomposition. Additionally, we have Closed Areas in which there are un-fished areas to analyze natural mortality. However, overall there is still a lot of uncertainty associated with this parameter. The PDT initially ranked uncertainty as 2.5, but the SSC urged the PDT to use 3 and the PDT agreed.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 3 Importance/effect on assessment = 3**

- **Catch data**

The US sea scallop fishery is conducted mainly by roughly 350 limited access vessels, with additional landings by the limited access general category fishery that can land up to 400 lbs per trip or day without a limited access permit. Although the predominant fishing gear is the New Bedford style scallop dredge, some vessels use otter trawls in the Mid-Atlantic. Recreational catch is negligible.

Landings on Georges Bank were fairly steady from 1999-2004 at 5000 mt and increased in 2005-2006, primarily due to the reopening of portions of the groundfish closed areas. Until recently, landings in the Mid-Atlantic were lower than on Georges Bank. There has been an upward trend in recruitment and landings in the Mid-Atlantic from the mid-eighties. Landings peaked in 2004 at 24,494 mt before declining during 2005-2006. Landings from other areas are minor in comparison. Gulf of Maine landings were less than 1% of the total US sea scallop landings in 2006, as were Southern New England landings.

There is uncertainty associated with comparing fishing effort and catch rate trends before and after 1994 due to regulatory and reporting changes. Additionally, the ability to link DR and VTR reports while data processing is reduced by incomplete data reports and other problems, which make it difficult to precisely estimate catches and fishing effort and prorate catches and fishing effort among areas and gear types. However, there have been significant improvements in general category reporting in recent years, decreasing the level of uncertainty.

Landings per unit effort (LPUE) trended downward until around 1998 (with occasional spikes probably attributable to strong recruitment events), but has increased considerably from 1999-2003 as the stock recovered. Further increases were seen in 2005-2006 on Georges Bank due primarily to the reopening of groundfish closed areas. LPUE in the limited access fishery has averaged about 1600 lbs/day in recent years, compared to the 400 lbs/day by a general category vessel.

It was discussed that although this is a large part of the assessment, this may not need to be included. However, another argument is that there is uncertainty about this due to unreported landings and inaccurate data entries. Inaccurate landings estimates would impact assessment results. It was noted, though, that landings reports have gotten much better in the General Category fishery, which is where a large part of the uncertainty used to be. Catch data impacts the CASA model primarily and will have a small impact on the assessment.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 1 Importance/effect on assessment = 2**

- **Discards**

Sea scallops are sometimes discarded on directed scallop trips because they are too small to be economically profitable to shuck or because of high-grading during access area trips to previously-closed areas. Ratios of discard to total catch (by weight) have been recorded by sea samplers aboard commercial vessels since 1992, though sampling intensity on non-access area trips was low until 2003. Discard ratios were low from 2005-2006, probably due to new gear regulations (4" rings) that went into effect at the end of 2004.

Sea scallops are also caught and either landed or discarded in fisheries targeting finfish and other invertebrates. Observer sea sample data from trawl trips targeting other species were used to calculate the ratio of pounds of scallops caught per pound of target species landed to obtain the estimate of scallop bycatch. A small amount of uncertainty is associated with this method because it is calculated by multiplying by total landings of target species from VTR records, which may not include all landings, thus resulting in an underestimate of scallop discards. Overall, we have good information on discards in the scallop fishery.
*Overall the PDT ranks this parameter as:*
**Discards uncertainty = 1 Importance/effect on assessment = 1**

- **Discard mortality**

Discarded sea scallops may suffer mortality on deck due to crushing, high temperatures, or desiccation and is highly variable across seasons due to different water temperatures and air temperatures. There may also be mortality after being thrown back into the water (physiological stress and shock), or from increased predation due to shock and inability to swim, or from shell damage (Veale et al. 2000; Jenkins and Brand 2001). About 90% of tagged scallops were still living several days after being tagged and placed back in the water (Murawski and Serchuk 1989). Total discard mortality (including mortality on deck) is uncertain but has been estimated as 20% (10% on deck + 10% after release) in previous assessments (NEFSC 2001, 2004).

We have good information for discards, but not for discard mortality, which can vary depending on season, water temperature, and air temperature, among other factors. Both have a small effect on the outcome of the assessment, which has a fairly low sensitivity to discard mortality and discards. It was pointed out that since 4-inch rings were implemented, discards and discard mortality has likely reduced. There is much uncertainty about the 20% discard mortality estimate used in the assessment; this is an area that needs more research.
*Overall the PDT ranks this parameter as:*
**Discard mortality uncertainty = 3 Importance/effect on assessment = 1**

- **Incidental mortality**

Scallop dredges likely kill and injure some scallops that are contacted but not caught, primarily due to damage caused to the shells by the dredge. Roughly 5-20% of the scallops remaining in the dredge track suffer non-landed mortality, depending on the substrate (Caddy 1973; Murawski and Serchuk 1989). For this assessment, incidental mortality was assumed to be 0.15 $F_L$ on Georges Bank and 0.04 $F_L$ in the Mid-Atlantic.

Incidental mortality has a moderate effect on the assessment, more so than discard mortality. The findings of the two studies that examined this issue were conflicting; one found fairly high incidental mortality while the other saw little or none. SARC39 conducted a sensitivity analysis

of this parameter on per-recruit calculations and found that the effects of incidental mortality on reference points are modest, but non-negligible.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 3 Importance in assessment = 2**

- **Commercial Shell Height Data**

Size compositions from port samples after 1984 when meat count regulations were in force are not used in this assessment because the samples appear to be selected for their size rather than being randomly selected based on differences between port and at-sea measurements. Due to limited observer coverage, shell height data collected at sea prior to 2003 should be interpreted cautiously. Shell heights from port and at-sea sampling (observer data) indicate that from 1975-1998 sea scallops between 70-90 mm often made up a considerable portion of the landings, but sizes selected by the fishery have increased since then such that scallops less than 90 mm were rarely taken from 2002-2006. Dealer landings also indicate an increase in scallop size in landings (80% of 2006 landings were in the 10-20 count and <10 count categories).

Shell height data from observed commercial trips has been incorporated into the CASA model, and uncertainty has reduced in the more recent years as the number of observed trips has increased. In the past, commercial shell heights were obtained from port samples that were likely biased, which had a substantial effect on assessment results.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 1 Importance/effect on assessment = 3**

- **Commercial Gear Selectivity**

The study conducted to determine the selectivity of the new gear (4" rings, 10" twine tops; required by Amendment 10, 2004) by towing a commercial dredge aside an NEFSC lined sea scallop survey dredge determined that the new gear has a more gradual selectivity curve that is shifted to the right compared to the 3.5" ring dredges that were in use from 1996-2004.

A study that estimated the selectivity of commercial dredge gear with 4" rings was recently published (Yochum and DuPaul), so it is well understood. Commercial gear selectivity is used in forecasting, but is not directly used in the CASA model.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 1 Importance/effect on assessment = 1**

- **Survey Gear Selectivity**

The NEFSC, beginning in 1979, uses an 8 foot dredge with 2" rings and a 1.5" plastic mesh liner, which retain smaller scallops than dredges without liners. Shell height data from SMAST video surveys from 2003-2006 were used to estimate survey dredge selectivity, which indicate that the survey dredge has constant selectivity and efficiency for sea scallops 40+ mm shell height. Thus, no adjustment was made to dredge survey shell height composition or abundance indices in this assessment to accommodate survey dredge selectivity. The relative abundance of small scallops is higher in unadjusted dredge survey composition data. Survey time series without selectivity adjustments are preferable technically.

Current evidence suggests that the survey dredge has flat selectivity for scallops >4 cm. Modest deviations from flat selectivity would have only modest effects on the assessment.
*Overall the PDT ranks this parameter as:*

**Uncertainty = 1 Importance/effect on assessment = 2**

- **Commercial Dredge Efficiency**

Evidence from a number of studies indicates that commercial dredge efficiency is between 40-60%; efficiency is near the higher end on relatively smooth sandy bottoms, such as occurs in the Mid-Atlantic, and at the lower end of this range on rocky bottoms. No assumption for commercial dredge efficiency is used in either the CASA assessment model or the SAMS forecasting model. It is used, however, in estimation of biomass from commercial dredge surveys.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 1.5 Importance/effect on assessment = 1**

- **Survey Dredge Efficiency**

The survey dredge has lower efficiency than commercial dredges (~70% that of commercial dredges), probably due to the liner used in the survey dredge to catch small scallops. Thus, the survey dredge efficiency is between 28-42%. The CASA assessment model does not use an assumption on survey dredge efficiency, but it is used in the SAMS model and in estimating biomass from survey-dredge surveys.
*Overall the PDT ranks this parameter as:*
**Uncertainty = 1.5 Importance/effect on assessment = 2**

- **Stock-Recruit Relationship**

There is no indication that recruitment of Georges Bank sea scallops has ever been limited by egg production/spawning stock biomass. Sea scallops are highly fecund, and there is a gyre on Georges Bank that should retain a high percentage of larvae. The target BMSY proxy is well above the sea scallop biomass that occurred during the 1980s and 1990s, so that the current target should be well above the point where recruitment limitation occurs.

By contrast, recruitment of Mid-Atlantic sea scallops has increased in recent years when spawning stock biomass has been higher. However, the trend towards higher recruitment started before the increase in biomass, so environmental factors are at least partially responsible for the increased recruitment. Thus, there is uncertainty whether or not there is a true relationship between recruitment and spawning biomass. And if it there is a relationship, there would be a positive impact on the scallop resource, so in terms of risk from this uncertainty it is low.
**Uncertainty = 3 Importance/effect on assessment = 2**

- **Density Dependence**

Analysis of growth and shell height/meat weight indicates no evidence of natural density-dependence among adults in closed areas. In fished areas, there is a small density-dependence growth effect, likely from greater fishing mortality in faster growing areas.
**Uncertainty = 2 Importance/effect on assessment = 2**

**Qualitative uncertainty - overall**

There is some degree of uncertainty related to all these parameters, which are summarized above and fully described in the recent assessments. However, overall the scallop assessment process is advanced in terms of the data sources and body of research available for the various parameters used in the assessment. Table 6 is a summary of the level of uncertainty and effect of that uncertainty on the scallop assessment. When all the parameters are combined there is little to some uncertainty associated with the scallop assessment (overall score of 1.5). In addition, there is low to some effect of these uncertainties on the overall assessment of the scallop resource. The Scallop PDT originally recommended that a 10% buffer be used between OFL and ABC to account for this level of scientific uncertainty. However, the SSC reviewed this approach and requested that more quantitative analyses be completed to establish an ABC control rule that would be more consistent with the final guidelines (Section 3.2.3.7.2).

**Table 6 – Summary of qualitative scientific uncertainty by parameter**

| Parameter | Uncertainty (Score from 0-4) | Importance or Effect on Outcome of Assessment |
|---|---|---|
| Growth | 2 | High |
| Maturity and fecundity | 2.5 | Low |
| Shell height / Meat weight relationships | 2 | Some |
| Natural mortality | 2.5 | High |
| Catch data | 1 | Some |
| Discards | 1 | Low |
| Discard mortality | 3 | Low |
| Incidental mortality | 3 | Some |
| Commercial shell height data | 1 | High |
| Commercial gear selectivity | 1 | Low |
| Survey gear selectivity | 1 | Some |
| Commercial gear efficiency | 1.5 | Low |
| Survey gear efficiency | 1.5 | Some |
| Stock-recruit relationship | 3 | Some |
| Density dependence | 2 | Some |
| Averages | 1.87 | Low to Some |

<table>
<tr><th></th><th></th><th colspan="3">Importance or effect on outcome of assessment</th></tr>
<tr><th></th><th></th><th>Low</th><th>Medium</th><th>High</th></tr>
<tr><td rowspan="3">Uncertainty</td><td>Low</td><td>• Discards<br>• Commercial gear selectivity<br>• Commercial gear efficiency</td><td>• Catch data<br>• Survey gear selectivity<br>• Survey gear efficiency</td><td>Commercial SH data</td></tr>
<tr><td>Medium</td><td>Maturity and fecundity</td><td>• SH-MW relationships<br>• Natural mortality<br>• Density dependence</td><td>Growth</td></tr>
<tr><td>High</td><td>Discard mortality</td><td>• Incidental mortality<br>• Stock-recruit relationship</td><td>none</td></tr>
</table>

### 3.2.3.7.2 Quantitative analysis of scientific uncertainty

On February 6, 2009, the SSC reviewed the qualitative analysis recommended by the PDT that could be used for setting ABC. While the SSC agreed that the proposed general process for setting ACLs is appropriate, they recommended that some specific modifications are needed to comply with the final rule on National Standard 1 Guidelines, which was published after the PDT prepared the qualitative analyses.

The SSC prepared several final memos to the Council and PDT, reporting that "the proposed ABC does not explicitly account for uncertainty, there is no quantified measure of uncertainty in OFL (including uncertainty in the $F_{MSY}$ proxy as well as the projected stock biomass), and there is no evaluation of how the ABC method performs with respect to preventing overfishing. Therefore, there is no scientific basis for using 90% of $F_{max}$ to derive ABC." In addition, "the SSC recognizes that the scallop stock assessment is one of the most informative assessments in the region, and the fishery is one of the most successfully managed. The positive status of the stock and the management system reflect the high-quality of science being produced by the Scallop PDT. The SSC also acknowledges that the draft Amendment document was developed before the final National Standard Guidelines were published (January 16 2009)."

**SSC Recommendation:**

1. **Managing the current fishery so that fishing mortality is less than $F_{max}$ complies with National Standard 1 (preventing overfishing while achieving the optimum yield on a continuing basis).**

2. **At this time, no analysis has been provided to demonstrate that the proposed ABC complies with National Standard 1 Guidelines. Uncertainty in the estimate of OFL has not been quantified, and performance of alternative ABC methods with respect to preventing overfishing has not been evaluated. Therefore, a method to derive ABC will be recommended at a later date.**

Specifically, the SSC requested "a quantified estimate of uncertainty in OFL (including uncertainty in the $F_{MSY}$ proxy as well as the projected stock biomass). A distribution of the projected value of OFL (the projected catch associated with $F_{max}$) will allow the SSC to use a lower quantile of the projected OFL such that ABC is lower, but not significantly different than OFL. In general, stochastic projection would be an appropriate approach to estimating uncertainty in OFL, but the SSC feels that the Scallop PDT is the most qualified group to determine the most appropriate method. Eventually, the SSC would like to base its ABC recommendation on an evaluation of how alternative ABC methods perform with respect to preventing overfishing." The SSC provided several alternative ABC methods for the Scallop PDT to consider.

The Scallop PDT met in March, May and July 2009 to develop analyses to satisfy SSC suggestions. On August 11, 2009 and the SSC approved the PDT recommendation to set ABC at the fishing mortality rate estimated to have 25% chance of exceeding OFL. The detailed quantitative analyses presented to the PDT are available in Appendix II. In summary, Monte-Carlo simulations were used to determine the distribution around the model parameters. These distributions were used to model $F_{max}$ in both the Mid Atlantic and Georges Bank. The probability of overfishing was plotted alongside the fraction loss of YPR to search for a best risk scenario.

The Scallop PDT presented an updated analysis of uncertainty of OFL based on a previous SSC recommendation to finalize a scallop ABC recommendation for fishing year 2010. The stochastic estimate of $F_{max}$ (which considers uncertainty in natural mortality, growth, meat yield, selectivity, discard mortality and non-capture mortality) is 0.37. The stochastic estimate is somewhat greater than the previous estimate of $F_{max}$ = 0.29 from deterministic calculations (i.e., assuming no uncertainty in component processes).

The PDT examined the consequences of a range of fishing scenarios, the associated probability of overfishing (i.e., probability that 2010 F is greater than $F_{max}$) and the projected loss in yield relative to $F_{max}$. Based on the results of these analyses, the SSC endorses the proposal by the Scallop PDT and other conventions of risk-based harvest rules that ABC be based on 25% probability of overfishing. Analyses of uncertainty indicate that a 25% risk of overfishing is associated with less than 1% loss in yield relative to $F_{max}$. The Council agreed with this determination and therefore includes an ABC rule that includes setting ABC at an *F* that has a 25% chance of exceeding $F_{max}$. For details of this analyses see Appendix II.

#### 3.2.3.7.3 ABC control rule

(iii) *ABC control rule*
means a specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (*see* paragraph (f)(4) of this section).

If adopted in this action, the specific ABC control rule that will be used for the Scallop FMP will be based on setting ABC equivalent to the fishing rate that has a 25% probability of overfishing. These analyses will be based on a stochastic estimate of $F_{max}$ that will be prepared by the Scallop PDT prior to each specifications package.

MSRA requires that these values and terms be in place for FY2011. Since estimates of scallop biomass are not available for 2011 yet, a subsequent action will actually implement the associated terms. The Council intends to work on Framework 22 in 2010 and that action will likely include the ABC specific values for FY2011 and FY2012; this amendment will approve the concept and foundation or "ABC control rule", and subsequent actions will include the actual values for applicable fishing years.

### 3.2.3.8 Description of management uncertainty (PROPOSED ACTION)

Management uncertainty encompasses factors such as efficacy of management controls and monitoring effectiveness. It also includes implementation error, described above as the inability to achieve targets exactly for whatever reason (Rosenberg and Restrepo 1994, in SARC 32). If the allocations are highly controlled and high quality data is collected, management uncertainty will be low, which allows the difference between the ACL and ACT to be minimized or eliminated.

There are two primary fishery components in the scallop fishery: the limited access fishery and the general category fishery. Each is managed differently so the level of management uncertainty varies for these fleets. Therefore, the Council decided to have two separate sub-ACLs for these fleets, with different buffers for management uncertainty to recognize that there are different levels of management uncertainty for these fleets.

Overall, there are only a handful of issues that contribute to management uncertainty in the scallop fishery. The Scallop PDT has identified seven primary sources of management uncertainty: 1) fishing mortality from the general category fishery; 2) increases in fishing effort from limited access vessels becoming "active" and switching from the confirmation of permit history (CPH) permit category; 3) mortality from the allowance of vessels to carry-over up to 10 DAS to the next fishing year; 4) increased mortality from vessels that upgrade or are replaced with new vessels; 5) uncertainty in catch from open area DAS (estimated versus actual landings per DAS); 6) ability of plan to monitor and enforce all catch; and 7) changes in fishing behavior that could increase landings above projected values.

The first two sources of management uncertainty are no longer an issue: mortality from the general category fishery and increases in fishing effort from limited access vessel becoming active from the CPH category. Until Amendment 11 was implemented, the general category fishery was an open access fishery so any vessel could apply for and receive a general category scallop permit. The only restriction was a 400 pound possession limit. The total mortality from this component of the fishery varied, but has increased since 2004, and that is one of the primary reasons total projected catch has been exceeded for the fishery overall in recent years. For example, the PDT estimated that mortality from the general category fishery in open areas would be equivalent to 3,500 DAS (or about 6.4 million pounds) in 2006. In reality the general category fishery caught 6.8 million pounds that year, and that is one of the primary reasons the fishery exceeded the management target in 2006 (Table 7).

**Table 7 - Scallop landings from general category vessels from 1994 to present**

| Fish Year | Total scallop landings (LA and GC) | Total scallop landings by General Category vessels only | |
|---|---|---|---|
| | | **LBS** | **%** |
| 1994 | 14,907,265 | 95,268 | 0.64% |
| 1995 | 15,807,941 | 123,967 | 0.78% |
| 1996 | 16,447,682 | 204,635 | 1.24% |
| 1997 | 12,619,221 | 310,049 | 2.46% |
| 1998 | 11,186,468 | 164,435 | 1.47% |
| 1999 | 21,286,244 | 150,482 | 0.71% |
| 2000 | 32,929,475 | 357,691 | 1.09% |
| 2001 | 45,164,706 | 1,216,947 | 2.69% |
| 2002 | 49,808,416 | 983,775 | 1.98% |
| 2003 | 54,778,793 | 1,809,071 | 3.30% |
| 2004 | 61,714,971 | 3,245,661 | 5.26% |
| 2005 | 53,214,097 | 7,495,884 | 14.09% |
| 2006 | 56,149,105 | 6,838,083 | 12.18% |

Amendment 11 implemented limited entry for this component of the fishery, as well as an IFQ program for qualifying vessels. So the general category fishery will be limited to the total IFQ allocated to qualifying vessels. Therefore, the likelihood of that component of the fishery exceeding the target is minimal.

The other source of management uncertainty that is no longer an issue is additional boats becoming active in the fishery. A permit owner is allowed to put their permit in "CPH" if the vessel is not going to fish that year. In the past there were several dozen permits in CPH on an annual basis, but in recent years that trend has changed and now there are zero permits in CPH – all permits are active and in the fishery (Table 8). The total number of active limited access vessels in 2000 was 298, and in 2007 it was 369. In the past the PDT would estimate how many permits would be active in the fishery and how many vessels would use their full allocation, but in some years the number of active vessels would be greater and more DAS would be used than projected. For example, in recent years the PDT has used a full-time equivalent estimate of 325, but based on the table below the number of full-time equivalent vessels has been above that in 2005-2007. It does seem that this source of management uncertainty is essentially gone because there are no vessels left in CPH and the number of full-time equivalent vessels is stabilizing.

**Table 8 - Scallop Permits by Application Year**

| AP_YEAR | FT | PT | OCC | FTSMD | PTSMD | FTTRW | PTTRW | OCCTRW | Grand Total | FT Equiv. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1994 | 225 | 24 | 5 | 6 | 8 | 25 | 27 | 26 | 346 | 282 |
| 1995 | 227 | 22 | 3 | 4 | 7 | 32 | 30 | 26 | 351 | 289 |
| 1996 | 217 | 19 | 3 | 5 | 8 | 28 | 27 | 25 | 332 | 274 |
| 1997 | 201 | 16 | 2 | 3 | 9 | 27 | 29 | 24 | 311 | 255 |
| 1998 | 203 | 11 | 3 | 2 | 7 | 23 | 27 | 19 | 295 | 248 |
| 1999 | 210 | 10 | 4 | 1 | 3 | 15 | 21 | 20 | 284 | 242 |
| 2000 | 219 | 16 | 4 | 2 | 4 | 17 | 20 | 16 | 298 | 256 |
| 2001 | 222 | 14 | 4 | 13 | 6 | 16 | 18 | 17 | 310 | 268 |
| 2002 | 232 | 14 | 4 | 26 | 6 | 16 | 11 | 15 | 324 | 288 |
| 2003 | 237 | 10 | 3 | 37 | 19 | 16 | 8 | 8 | 338 | 306 |
| 2004 | 240 | 4 | 3 | 48 | 25 | 15 | 3 | 5 | 343 | 316 |
| 2005 | 248 | 3 | 1 | 56 | 29 | 18 |  | 5 | 360 | 335 |
| 2006 | 255 | 3 | 2 | 59 | 34 | 14 |  |  | 367 | 343 |
| 2007 | 256 | 2 | 1 | 63 | 35 | 12 |  |  | 369 | 346 |

The remaining four sources of management uncertainty will be described in more detail in the following sections. Three are relevant for the limited access fishery (carryover DAS, upgrades and vessel replacements, and catch from open area DAS), and one is relevant for both components of the fishery (ability to monitor and enforce all catch).

It should be noted that there are several measures in the Scallop FMP that have the ability to cause the FMP to *undershoot* an ACL. For example, if an access area is closed due to the YT TAC being reached before all allocated trips are taken, that expected catch for that area will not be reached. If an access area does close, vessels get open area DAS as compensation, but they could catch less than 18,000 pounds and the catch will be from a different area. In addition, each limited access vessel is allocated a set number of open area DAS and access area trips and they may not use all allocated effort in a given fishing year. A vessel can carry over up to 10 DAS, but access area effort can only be carried over for the first 60 days of the following fishing year, and this provision is only valid if the access area is open in Year 2.

Table 9 is a summary of allocated and used DAS by year. For most years over 80% of all allocated DAS were used. While unused DAS is a way the fishery may undershoot an ACT or ACL, it can also be viewed as a source of management uncertainty, because those DAS can be carried forward, increasing the risk of exceeding an ACT or ACL in subsequent fishing years (See Section 3.2.3.8.1 below for a discussion of management uncertainty from the DAS carryover provision).

Likewise, general category IFQ vessels may not use all allocated quota each year. It is too early to know how much quota is unused since the IFQ program has not been fully implemented yet. Leasing may reduce the amount of unused quota, but it still may be a factor in undershooting

ACTs and ACLs. These measures could be viewed as measures that reduce overall risk of exceeding an ACL.

**Table 9 – Number of allocated and used DAS for FY2000-FY2009 (to date)**

| | DAS allocated | DAS used | % DAS used | Carry over DAS | Closed Area Conversion DAS |
|---|---|---|---|---|---|
| 2000 | 32522 | 24786 | 76.2% | | |
| 2001 | 34034 | 28860 | 84.8% | | |
| 2002 | 35835 | 30026 | 83.8% | | |
| 2003 | 37953 | 32147 | 84.7% | | |
| 2004 | 22462 | 16062 | 71.5% | | |
| 2005 | 15344 | 14364 | 93.6% | | |
| 2006 | 20343 | 17229 | 84.7% | 1158 | 2098 |
| 2007 | 18577 | 15238 | 82.0% | 1950 | |
| 2008 | 14216 | 11853 | 83.4% | 2322 | 491 |
| 2009 | 14923 | 5130* | 34.4%* | 1804 | 1050 |

**Preliminary for 2009 - DAS used for March 1, 2009 through June 30, 2009*
*DAS data from NERO website: http://www.nero.noaa.gov/ro/fso/das.htm*

### 3.2.3.8.1 Limited access scallop fishery

With respect to the limited access fishery (full-time, part-time, and occasional permits), the primary source of management uncertainty is the open area DAS allocation to full-time vessels. The effort from part-time and occasional vessels does not contribute enough to warrant serious consideration in the identification of sources of management uncertainty because there are very few vessels left in these categories. Increased catch from carryover DAS and vessel upgrades and replacements are sources of management uncertainty as well. Each will be described below separately.

- *Estimate of catch from open areas*

The PDT uses a sophisticated model to predict the catch per day from open area DAS, but it varies by vessel, area and time of year. For example, in 2007 the average LPUE per DAS was about 1600 pounds per day, and the projection in FW18 was 1866. While the estimated versus actual LPUE is a major source of management uncertainty, the overall number of open area DAS are less in recent years compared to earlier years, so the degree of uncertainty is less compared to several years ago. But since there is no output restriction on the catch for a vessel in open areas, there is not 100% certainty that a vessel or the fleet overall will not catch more than projected levels per DAS.

While catch from open area DAS is viewed as a source of management uncertainty, the PDT feels strongly that DAS management may account for risk associated with projected versus actual estimates better than full output controls on catch. Specifically, if biomass projections are higher than actual biomass, DAS allocations will be set higher as well. But if biomass is actually lower than projected the catch rates will be lower per DAS since less biomass is available then projected. However, if a complete output control was used for open areas (i.e. possession limit per trip or quota for the year per vessel) each vessel would harvest that amount – whether the biomass estimate was high or low. Since DAS is a limit on the time a vessel can fish, it is better linked to the amount of resource actually available; in a sense DAS are self regulating because catch rates match the biomass available and the vessel can only harvest what it can in a set amount of time.

In recent years, more limited access fishing has been in access areas compared to fishing under open area DAS (Table 10). In 2004 there were 7 trips allocated, but that is the year Hudson Canyon first opened and fishing mortality was very high in that area. Furthermore, vessels were given the opportunity to take access area trips in GB access areas, but they did not have to take them; they could use open area DAS instead. And in 2005, while there were five trips allocated, but many of those were in Hudson Canyon, and there was not sufficient resource in that area to support all those trips, so many of those trips were not actually fished until 2006-2007 – vessels were permitted to carry allocated 2005 trips forward. When fishing in access areas, vessels are allocated a set number of trips with a possession limit. Thus, there is high management certainty for access area effort in terms of actual versus projected catch. These trips are not an allocation of quota so vessels may end up harvesting less per trip or not take trips for whatever reason. But, there is a maximum catch per area that has a high degree of certainty due to a possession limit.

The biomass estimates for access areas are arguably more accurate than open areas because these areas generally have more than one survey. Very often the research set-aside program under the Scallop FMP supports research projects that estimate biomass in access areas; that is one of the top research priorities of the program. The research projects generally have more stations and when combined with the federal survey give more robust results.

**Table 10 – Number of DAS and access area trips allocated by year**

| Year | Total DAS allocated | FT | PT | Occ | Number of AA trips (FT) |
|---|---|---|---|---|---|
| 2000 | 32522 | 120* | 48 | 10 | 6 |
| 2001 | 34034 | 120* | 48 | 10 | 3 |
| 2002 | 35835 | 120* | 48 | 10 | 3 |
| 2003 | 37953 | 120* | 48 | 10 | 3 |
| 2004 | 22462 | 42 | 17 | 4 | 7 |
| 2005 | 15344 | 40 | 16 | 3 | 5 |
| 2006 | 20343 | 52 | 21 | 4 | 5 |
| 2007 | 18577 | 51 | 20 | 4 | 5 |
| 2008 | 14216 | 35 | 14 | 3 | 5 |
| 2009 | 14923 | 42 | 17 | 3 | 5 |
| 2010 | 13324 | 38 | 15 | 3 | 4 |

*Allocated DAS from NERO website: http://www.nero.noaa.gov/ro/fso/das.htm*
** Note that before 2004, access area trips counted toward annual DAS. For example, 10DAS would be charged per vessel if they participated in an access area program. Vessels did not have to take access area trips, but if they did 10 or 12 DAS would be charged against their annual allocation depending on the area and year. Since 2004 vessels are allocated area specific trips, if they do not take them they do not get additional DAS.*

**Table 11 – FY2007 and FY2008 limited access scallop catch by area**

| Area | FY2007 landings (mt) | FY2007 landings (lb) | FY2007 percent of total | FY2008 landings (mt) | FY2008 landings (lb) | FY2008 percent of total |
|---|---|---|---|---|---|---|
| Closed Area 1 | 2,418 | 5,330,677 | 10% | | | |
| Elephant Trunk | 7,666 | 16,900,105 | 32% | 10,637 | 23,450,386 | 51% |
| Hudson Canyon | 2,450 | 5,401,334 | 10% | 56 | 122,518 | 0.3% |
| Nantucket Lightship | 2,550 | 5,621,156 | 10% | 2,098 | 4,624,387 | 10% |
| Open area | 9,205 | 20,293,343 | 38% | 8,205 | 18,088,743 | 39% |
| Annual Total | 24,289 | 53,546,615 | | 20,995 | 46,286,033 | |

** Does not include RSA catch or landings by limited access vessels on LAGC trips*

There are two sources of error making up management uncertainty – error in the model, and from the estimate of exploitable biomass for open areas. The CV for LPUE model is ~5%. CV for exploitable biomass is 6.7%. Assuming independence, the CV of open area LPUE is 8.3%, but it is probably a little higher (10% maybe – alternative 2). To include spatial concerns, an additional 15-30% reduction should be considered. Overall, the PDT discussed that a specific response to the Committee request for a second management buffer alternative for the LA fleet could be 10%. However, it needs to be recognized with all the buffers (LA and LAGC) that the highly spatial nature of this fishery is a major source of uncertainty that has not adequately been addressed and should be considered. It is difficult to quantify, but should be part of the decision for setting the ACT.

- *Carry over provision*

There are currently several "carry-over" provisions that increase management uncertainty in terms of controlling the maximum catch per year. For example, each limited access vessel is permitted to carry over up to 10 DAS to the next fishing year. Most DAS are used each year, but there is potential for this effort to be carried over to the next fishing year, so ACLs for the second year could be impacted. In addition, limited access vessels are permitted to take an access area trip or compensation trip in an access area within the first 60 days of the next fishing year if the area is open the following year. This was implemented as a way to promote safety at sea so vessels are not in a use-it-or-lose-it situation at the end of the fishing year. However, measures like this add some degree of uncertainty in terms of when catch will be harvested. It is not additional catch, but could increase catch to a small degree in the subsequent fishing year. In addition, if an access area is closed due to yellowtail bycatch, compensation DAS are awarded that may not result in the 18,000 pounds per day expected, and the catch will not come from the same area.

In order to analyze the potential impact of these carryover provisions on future catch, the PDT ran a scenario for FY2007. Rather than each vessel fishing 51 DAS, each vessel fishes 56 DAS (5 carryover DAS from FY2006). For recent fishing years the fleet has carried over roughly 1800 DAS, so about 5 DAS each (Table 9). When this simulation is run total catch increases about 10% (Table 12). This is a complex measure because technically this is not additional catch; it was accounted for, but in previous fishing years. It is also possible that vessels will continue to carry DAS forward, and not fish them all in a subsequent fishing year. So while this measure may have a higher risk of exceeding an ACT or ACL, it should be taken into consideration that in order to increase catch from this provision in one year, catch was lower in a different fishing year, so over time catch will even out. What is important is if there is a change in the total number of carry over DAS from year to year. If there is a sudden drop in the total number of DAS carried forward by the fleet, then landings will likely increase in that fishing year. For example, if we assume a certain number of DAS will be carried over from year 1 to year 2, but vessels fish DAS in year 1 instead, catch in year 1 will be higher than we think. The PDT will continue to monitor the number of DAS carried forward. It was also suggested that if this becomes a major source of management uncertainty the Council may want to consider reducing the amount of DAS a vessel can carry forward to reduce uncertainty. Now that total DAS have reduced from 120 to closer to 40 DAS, a 10 DAS carryover provision has gone from 8% of total DAS allocated to close to 25%.

**Table 12 – Scenario for management uncertainty related to carryover provision**

| hp | len | lpueop14 | newves | agev | Count of VP_NUM | sclan/vessel | sim.sclan | sclantot-51DAS |
|---|---|---|---|---|---|---|---|---|
| 392 | 61 | 1,585 | - | 17 | 5 | 70,669.53 | 353,348 | 319,663.90 |
| 431 | 77 | 1,585 | - | 23 | 9 | 73,489.77 | 661,408 | 598,357.59 |
| 523 | 64 | 1,585 | - | 30 | 5 | 74,576.23 | 372,881 | 337,335.30 |
| 530 | 77 | 1,585 | - | 27 | 25 | 76,444.23 | 1,911,106 | 1,728,924.86 |
| 618 | 66 | 1,585 | - | 20 | 4 | 78,091.15 | 312,365 | 282,587.67 |
| 641 | 81 | 1,585 | - | 20 | 37 | 80,401.01 | 2,974,838 | 2,691,253.60 |
| 763 | 65 | 1,585 | - | 29 | 4 | 80,823.05 | 323,292 | 292,473.54 |
| 814 | 83 | 1,585 | - | 29 | 74 | 84,099.65 | 6,223,374 | 5,630,114.92 |
| 950 | 64 | 1,585 | - | 24 | 1 | 84,772.27 | 84,772 | 76,691.14 |
| 959 | 86 | 1,585 | - | 22 | 30 | 87,824.51 | 2,634,735 | 2,383,572.58 |
| 1,121 | 89 | 1,585 | - | 26 | 38 | 90,740.34 | 3,448,133 | 3,119,430.84 |
| 1,299 | 90 | 1,585 | - | 16 | 12 | 94,640.55 | 1,135,687 | 1,027,424.41 |
| 1,545 | 99 | 1,585 | - | 23 | 11 | 98,349.98 | 1,081,850 | 978,719.71 |
| **814** | **77** | **1,585** | | | **255** | **82,686** | **21,517,788** | **19,466,550** |
| | | | | | | | **10.5%** | |

*Scenario is for FY2007 (56 DAS – 5 DAS carryover DAS from original 51 DAS allocation)*

There are also two rollover measures proposed in Amendment 15 that might contribute to management uncertainty: 1) potential IFQ rollover in the LAGC fishery, and 2) potential RSA rollover for the overall fishery RSA program. Generally, the management uncertainty associated with these two measures would be very low because it is such a small portion of the overall fishery. IFQ vessels would be restricted to carry over a limited portion of their IFQ and the RSA program is a small portion of the overall catch to start with. Therefore, these measures are not likely to significantly affect the certainty of catch for a given fishing year.

- *Vessel upgrades and replacements*

All limited access vessels are permitted to upgrade their permit once, and are allowed to replace their vessel within the same vessel replacement criteria (10:10:20 for GRT:Length:HP). This is a source of management uncertainty because if a vessel increases its horsepower, it is potentially able to catch more per DAS. This is not a real issue for access area trips because vessels are limited to a possession limit, but if many vessels in the fishery upgrade, overall catch could increase as a result. It is not likely that many vessels will upgrade or be replaced in a single year because it is expensive.

NMFS estimates that approximately 1/3 of the current limited access vessels have completed their one-time vessel upgrade allowance. Therefore, about 2/3 of the fleet could still upgrade their horsepower beyond 10%. The analyses below describe what the potential impacts of more upgrading could mean for overall catch. Again, this is not likely going to happen overnight and the PDT can monitor it and adjust future projections based on more vessels upgrading.

Vessel replacement is another type of management uncertainty. Vessels are permitted to be replaced if the GRT:Length:HP of the new vessel is within the 10:10:20 restrictions – horsepower cannot be increase by more than 20%, GRT cannot be increased by more than 10%, and length cannot be increased by more than 10%. If some fraction of the fleet replaces their vessels in one year catch could increase. The analyses below describe the potential impact of vessel replacement. Again, it is very unlikely that a large number of vessels will be replaced in one year since it is very expensive.

The PDT analyzed the impact of this source of uncertainty on estimated catch. Below are two scenarios: first, the largest vessels in the fleet upgrade their permits and put their permits on new vessels (Table 13). Second, 30% of each vessel class upgrades and puts their permits on new vessels (Table 14). For both scenarios the 2007 fishing year is used for the simulation (51 DAS, open area landings estimated to be 20.3 million pounds). If the largest vessels upgrade and replace, overall catch is expected to increase by 4.6%. And if 30% of all vessels in each vessel class upgrade and replace, overall catch is expected to increase by 2.3%.

**Table 13 – Scenario 1 for management uncertainty related to vessel upgrades and replacements**
(Scenario 1 assumes that the largest vessels upgrade and replace (36% of FT vessels)

| upgradegrp | hp | len | newves | agev | Count of VP_NUM | sclan/vessel | sim.sclan | sclantot-51DAS |
|---|---|---|---|---|---|---|---|---|
| - | 392 | 61 | - | 17 | 5 | 63,932.78 | 319,664 | 319,663.90 |
| - | 431 | 77 | - | 23 | 9 | 66,484.18 | 598,358 | 598,357.59 |
| - | 523 | 64 | - | 30 | 5 | 67,467.06 | 337,335 | 337,335.30 |
| - | 530 | 77 | - | 27 | 25 | 69,156.99 | 1,728,925 | 1,728,924.86 |
| - | 618 | 66 | - | 20 | 4 | 70,646.92 | 282,588 | 282,587.67 |
| - | 641 | 81 | - | 20 | 37 | 72,736.58 | 2,691,254 | 2,691,253.60 |
| - | 763 | 65 | - | 29 | 4 | 73,118.38 | 292,474 | 292,473.54 |
| - | 814 | 83 | - | 29 | 74 | 76,082.63 | 5,630,115 | 5,630,114.92 |
| - | 950 | 64 | - | 24 | 1 | 76,691.14 | 76,691 | 76,691.14 |
| 1 | 1,151 | 95 | 1 | 1 | 30 | 88,862.00 | 2,665,860 | 2,383,572.58 |
| 1 | 1,345 | 98 | 1 | 1 | 38 | 92,122.41 | 3,500,651 | 3,119,430.84 |
| 1 | 1,559 | 99 | 1 | 1 | 12 | 95,094.56 | 1,141,135 | 1,027,424.41 |
| 1 | 1,854 | 109 | 1 | 1 | 11 | 99,586.98 | 1,095,457 | 978,719.71 |
| | **890** | **80** | | | **255** | **77,845** | **20,360,505** | **19,466,550** |
| | | | | | | | **4.6%** | |

**Table 14 – Scenario 2 for management uncertainty related to vessel upgrades and replacements**
(Scenario 2 assumes that 30% of vessels in each vessel class will upgrade and replace vessel)

| hp | len | lpueop14 | newves | agev | Count of VP_NUM | sclan/vessel | sim.sclan | sclantot-51DAS |
|---|---|---|---|---|---|---|---|---|
| 416 | 63 | 1,585 | - | 12 | 5 | 65,362.47 | 326,812 | 319,663.90 |
| 457 | 79 | 1,585 | - | 16 | 9 | 67,978.82 | 611,809 | 598,357.59 |
| 554 | 66 | 1,585 | - | 21 | 5 | 68,990.17 | 344,951 | 337,335.30 |
| 562 | 79 | 1,585 | - | 19 | 25 | 70,715.93 | 1,767,898 | 1,728,924.86 |
| 655 | 68 | 1,585 | - | 14 | 4 | 72,231.57 | 288,926 | 282,587.67 |
| 679 | 83 | 1,585 | - | 15 | 37 | 74,368.64 | 2,751,640 | 2,691,253.60 |
| 809 | 67 | 1,585 | - | 21 | 4 | 74,768.57 | 299,074 | 292,473.54 |
| 863 | 85 | 1,585 | - | 20 | 74 | 77,799.53 | 5,757,165 | 5,630,114.92 |
| 1,007 | 66 | 1,585 | - | 17 | 1 | 78,417.05 | 78,417 | 76,691.14 |
| 1,017 | 89 | 1,585 | - | 16 | 30 | 81,237.79 | 2,437,134 | 2,383,572.58 |
| 1,188 | 92 | 1,585 | - | 18 | 38 | 83,939.93 | 3,189,717 | 3,119,430.84 |
| 1,377 | 93 | 1,585 | - | 11 | 12 | 87,528.85 | 1,050,346 | 1,027,424.41 |
| 1,638 | 102 | 1,585 | - | 16 | 11 | 90,975.15 | 1,000,727 | 978,719.71 |
| **863** | **79** | **1,585** | | | **255** | **76,486** | **19,904,617** | **19,466,550** |
| | | | | | | | **2.3%** | |

- *Overall*

The three sources of management uncertainty above are all related to open area DAS effort. It has been mentioned that catch from access areas has a much higher degree of certainty in terms of actual catch. The PDT discussed that there is a level of uncertainty related to access area trips as well however, in terms of overall monitoring and enforcement. Similar to the general category IFQ program, this component of the limited access fishery does have a high degree of certainty in terms of landings, but that is dependent on a sufficient monitoring and enforcement program.

Currently the violations for exceeding the possession limit for an access area trip are severe, and industry members have voiced that they would rather land less because the penalties are so high for noncompliance. Overall, the PDT is confident in the monitoring and enforcement of catch from access area trips, but recognizes that a small part of the overall buffer between the LA sub-ACL and ACT should recognize that monitoring and enforcement of access area trips are not perfect.

**Overall, when all three sources are considered, along with the issue of monitoring and enforcement uncertainty, the PDT recommends that the buffer between the limited access sub-ACL and ACT should be one of the following two options:**

**Option 1: LA ACT set at *F* rate with 25% probability of exceeding the total ACL (which is equal to ABC).** (PROPOSED ACTION)
Similar to how ABC is set at *F* rate with 25% probability of exceeding the OFL, this buffer would be based on similar analyses that would identify an *F* rate with 25% probability of exceeding ABC. For example, for 2011 ABC is set at $F = 0.32$ with a corresponding catch of 60 million pounds. The fishing mortality equivalent to a 25% chance of exceeding ABC is 0.28 and a catch of about 50.4 million pounds overall and 47.2 million pounds for the LA fishery.

Currently that is about a 14% reduction as a buffer for management uncertainty for the LA fishery (see Figure 2).

**Option 2: Identify a specific buffer based on results of new analyses of A) variability in estimate of LPUE, or B) projected LPUE compared to actual estimates from open area DAS.**

The Scallop Committee requested that one option base the LA buffer primarily on the uncertainty in open area catch since that has been identified as the primary source of management uncertainty for the LA fishery. Error associated with open area catch is complex because it is directly linked to "scientific error" associated with model error and estimates of open area catch rates. The coefficient of variance (CV) for LPUE in the model is ~5%. The CV for exploitable biomass is 6.7%. Assuming independence, the CV of open area LPUE is 8.3%, but it is probably a little higher. The PDT discussed that an overall buffer of 10% could be a reasonable value to account for primary source of uncertainty. However, the PDT added that it needs to be recognized with all the buffers (LA and LAGC) that the highly spatial nature of this fishery is a major source of uncertainty that has not adequately been addressed in the current buffers and should be considered. While it is difficult to quantify it cannot be ignored because it is a major assumption that is made in all the models, while this fishery and resource is highly non-uniform.

#### 3.2.3.8.2 General category scallop fishery

Since implementation of Amendment 11 there are three general category permit types: limited access general category IFQ permits, limited access incidental catch permits, and limited access Northern Gulf of Maine (NGOM) permits. This action proposes to account for catch from the incidental catch permits in setting OFL (See 3.2.3.4). As for the NGOM permits, catch will be accounted for in a separate ACL that is removed before the overall ACL for the directed fishery (See 3.2.3.3). Because resource in the NGOM is currently not incorporated in the overall assessment of the scallop resource, the ACL for this area can be treated separately as long as it is within the overall OFL for the resource. This area is managed under a hard TAC and a 200 pound possession limit.

The limited access general category IFQ fishery (LAGC) is under the directed ACL for the scallop fishery. The ACL for the directed fishery (LA and LAGC) is further divided into two ACLs. The LAGC ACL is equal to 5% of the total ACL for the general category qualifiers and 0.5% for the limited access vessels that also qualified for a LAGC permit. This action proposes that a management uncertainty buffer be applied for this component of the fishery, but it should be very small since this fishery is managed under an IFQ. All vessels that qualify for this permit will be allocated an individual amount of quota based on their contribution factor (historical catch and years active in the general category scallop fishery).

**The Committee recommends two options for consideration:**
**Option 1: Zero buffer (LAGC ACL = LAGC ACT)** (PROPOSED ACTION)

**Option 2: Up to 5% buffer to account for potential monitoring concerns, IFQ carryover provision and other implementation error**

#### 3.2.3.9 Accountability measures for Scallop ACLs

According to the final rule, AMs are management controls implemented for stocks such that exceeding the ACL or sector-ACL is prevented, where possible, and corrected or mitigated if it occurs. AMs include: (1) Those that are applied in-season and designed to prevent the ACL from being reached, including an ACT; (2) measures applied after the fishing year that are designed to address the operational issue that caused the ACL overage, ensuring it does not happen in subsequent fishing years, and, as necessary, address any scientific harm to the stock; and (3) those based on multi-year average data which are still reviewed and applied annually.

AMs should address and minimize both the frequency of overages and the magnitude of an overage. AMs should be designed so that if an ACL is exceeded, specific adjustments are effective in the next fishing year, or as soon as possible, with explanation of why more timely adjustment is not possible. A "multiyear plan" is a plan that establishes harvest specifications or harvest guidelines for each year of a time period greater than one year. Because "multiyear plans" establish ACLs and ACTs for more than one year at a time, they should include AMs that provide if an ACL is exceeded in one year, then a subsequent year's harvest specification (including ACLs and ACTs) could be revised. This is the case for the Scallop FMP – so ACLs and AMs should be set for the length of time that the framework or specification is in place, usually 2 fishing years at a time.

The final rule recommends that as a performance standard, if the average catch exceeds the average ACL more than once in the last four years, then the ACL – AM system should be re-evaluated to improve its performance. The initial ACL and management measures should incorporate information from previous years so that AMs based on average ACLs can be applied from the first year.

Scallop catch is monitored throughout the year. Vessels are required to report landings after each trip, and dealers are required to report landings each week. It could be possible to consider in-season adjustments if necessary, but since the ACT is set lower than the ACL, an in-season AM beyond the ACT may not be warranted at this time. Since fishing effort will be allocated based on the ACT, the ACT itself will serve as the primary in-season AM due to the buffer between ACT and ACL; lower allocations are given to the fishery in an effort to prevent the ACL from being exceeded. The LA and LAGC fisheries will each have their own ACT stemming from their own sub-ACL.

##### 3.2.3.9.1 Limited Access AMs (PROPOSED ACTION)

**The primary AM for the limited access fishery is the use of an ACT.** The buffer between ACL and ACT would act as a proactive in-season AM. Setting allocations to ACT rather than ACL would reduce the likelihood of exceeding the ACL.

If the sub-ACL for the limited access fleet is exceeded, the simplest, cleanest AM would be an **overall DAS reduction in the subsequent year to account for any overages**. The PDT will identify how much the LA sub-ACL was exceeded, identify an appropriate DAS equivalent for that overage, and total DAS allocations for the LA fleet will be reduced the following year to account for that overage. Specifically, a formula will be used to determine the translation of this reduction from overage (poundage) to the input control (DAS) based on the most up-to-date landings per unit effort per day data. For instance, if the fishery goes over an ACL by 100 mt, that would be equivalent to *x* DAS, as determined by a mean LPUE for the fishery. That *x* DAS will be divided by the number of vessels in the fleet to determine *y* DAS per vessel reduction in the following year. Using the projected LPUE for 2010 of 1837 (NEFMC, 2010) pounds per day, an overage of 100 mt (220,000 pounds) would amount to a reduction of 0.4 DAS per vessel (using the estimate of 325 FTE vessels) as shown below.

$$\frac{220{,}000lbs}{1837lbs/DAS}=119.8DAS,\frac{119.8DAS}{325FTEvessels}=0.4DAS/FTEvessel$$

DAS are currently rounded when allocated, if AMs are triggered and the reduction is a fraction of a DAS, that would be rounded up to one DAS.

#### 3.2.3.9.1.1 Option to include a disclaimer for when LA AM would not be triggered even if LA sub-ACL exceeded (PROPOSED ACTION)

If overall *F* is re-estimated after the fishing year has ended and is more than one standard deviation below overall *F* for ACL (currently estimated to be 0.28), AMs for the limited access fishery would not be triggered. One standard deviation around ACL is 0.04 (range of 0.24 to 0.32). Therefore if re-estimated *F* is 0.23 or less AMs would not be triggered.

This disclaimer was originally discussed by the PDT because there have been cases in recent years when actual catch is higher than estimated, primarily because catch-per-day is higher than estimated. Concurrently, *F* was lower than projected. It is possible that biomass was underestimated in these cases and if the ACL is exceeded for that reason, it is awkward to trigger AMs when biomass is higher than expected. It was also pointed out that while actual catch is sometimes substantially higher than projected, most of the projections have a CV of at least 10%, meaning that the actual biomass could be at least 20% higher or lower than the estimate, and even 30-40% higher in years further out in the projection. The proposed AM disclaimer provision for the LA fleet is only appropriate for a stock that is above the biomass target. If would not be appropriate at any time the stock is overfished or in the process of rebuilding.

If the limited access scallop fishery exceeds their ACL, the PDT will re-estimate *F* the summer after that fishing year is completed. The scallop fishing year ends February 29 for 2011. NMFS should have a good idea if ACLs were exceeded by the following June. If NMFS finds that the limited access ACL has been exceeded, then the PDT will re-estimate *F* for that fishing year using new information before September. If the updated estimate of *F* is less than one standard deviation of *F* associated with ACL then LA AMs will not be triggered for the fishing year that starts the following March. If however, updated *F* is below ACL but within one standard deviation (currently 0.24 and higher), AMs will be triggered for the following fishing year. The PDT will estimate how many DAS should be reduced per vessel to account for the overage if AMs are triggered.

#### 3.2.3.9.2 General Category AMs (PROPOSED ACTION)

**The primary AM for the limited access general category ACL is the use of an ACT**. The buffer between ACL and ACT would act as a proactive in-season AM. Setting allocations to ACT rather than ACL would reduce the likelihood of exceeding the ACL.

**If an individual vessel exceeds their IFQ or leased IFQ in a given fishing year, their IFQ the following fishing year would be reduced the following fishing year by the same amount.** If they exceed their IFQ in excess of their allocation the following year, any outstanding overage would carry over to future fishing years. The Committee clarified that if an individual leases quota and exceeds the amount he/she can fish for the year, that individual is subject to any AMs that may be associated with the leased quota.

#### 3.2.3.9.2.1 Option to allocate catch to the LAGC fishery in subsequent fishing year if the LA disclaimer is triggered and AMs are not imposed on LA fishery for exceeding their sub-ACL (PROPOSED ACTION)

If the disclaimer for the limited access fishery is triggered, Alternative 3.2.3.9.1.1, then 5.5% of the difference between the exceeded limited access sub-ACL and the actual limited access landings will be allocated to the general category IFQ fleet in the next fishing year. The poundage will be deducted directly from the following year's limited access sub-ACL and will be divided among the IFQ fleet in the same way that all quota is divided now.

The Council developed this alternative at the final meeting in response to concerns raised during the public comment process. There was general support for the use of the limited access disclaimer so AMs are not triggered when biomass is actually higher than expected. But concerns were raised that this disclaimer was unfair because it allowed one portion of the fleet to exceed their sub-ACL in the event that biomass was underestimated, but not the other. This proposed change will in effect replace some of the allocation the LAGC would have received had the projection been closer to realized catch (more biomass provided more catch under the same F). It was argued that having a disclaimer for only one portion of the fleet impacted fishing opportunities for the LAGC fleet, and that was unfair. Amendment 11 approved that the LAGC fishery should receive 5.5% of projected catch, and this measure will further that concept so that the LAGC fishery is allocated closer to 5.5% of the actual catch in the event that the LA fishery catches more than projected because projections underestimated catch for a particular fishing mortality rate.

Because additional catch for the LAGC fishery is deducted directly from the following year's limited access sub-ACL this is not a reallocation of fishing opportunity. The limited access fishery caught an equivalent amount of that additional catch the first year, while the LAGC fleet would be given that opportunity the second year. Again, this allocation would only occur if the LA disclaimer is triggered, not if the LA fishery exceeds their sub-ACT or sub-ACL, only if the disclaimer is triggered.

### 3.2.3.9.3 NGOM AMs (PROPOSED ACTION)

Technically, the NGOM already has an in-season AM because when the hard-TAC is predicted to be reached, the fishery is closed. If that component of the fishery exceeds the overall hard-TAC (equal to the NGOM ACL) after all data is final, then the hard TAC the following year could be reduced by that amount the following fishing year, or by mid season the following fishing year if data are not available (i.e. reduction on June 1 if necessary).

### 3.2.3.10 Scallop ACL for other fisheries

The scallop fishery may want to consider implementing ACLs for other fisheries in which scallops are appreciably caught as bycatch. However, based on bycatch analyses and input from

PDT, there are no fisheries that catch an appreciable amount of scallops as discards (**Table 15**). Based on CY2005 data used in the SBRM Amendment, 2% of all scallop discards are from other fisheries and when compared to total scallop catch (landed plus discards), that percentage is reduced to about 0.5%. Therefore, no scallop sub-ACLs in other fisheries will be considered at this time; the expected impacts on overall mortality are low from non-targeted fisheries.

**Table 15 – Summary of scallop discards by gear type for from 2005 observer data (SBRM Amendment)**

| Gear Type | Access Area | Area Fished | Mesh Group | Trip Category | Sea Scallop |
|---|---|---|---|---|---|
| Longline | HOOK | NE | all | all | |
| Longline | OPEN | MA | all | all | |
| Longline | OPEN | NE | all | all | |
| Hand Line | OPEN | MA | all | all | |
| Hand Line | OPEN | NE | all | all | 0 |
| Otter Trawl | B | MA | large | all | |
| Otter Trawl | B | NE | small | all | |
| Otter Trawl | B | NE | large | all | 14.04 |
| Otter Trawl | OPEN | MA | small | all | 42.75 |
| Otter Trawl | OPEN | MA | large | all | 13.96 |
| Otter Trawl | OPEN | NE | small | all | 3.56 |
| Otter Trawl | OPEN | NE | large | all | 15.32 |
| Otter Trawl | USCAN | MA | small | all | |
| Otter Trawl | USCAN | MA | large | all | |
| Otter Trawl | USCAN | NE | small | all | 0.02 |
| Otter Trawl | USCAN | NE | large | all | 32.3 |
| Scallop Trawl | CLOSED | MA | all | general | |
| Scallop Trawl | CLOSED | MA | all | limited | |
| Scallop Trawl | CLOSED | NE | all | limited | |
| Scallop Trawl | OPEN | MA | all | general | 450.22 |
| Scallop Trawl | OPEN | MA | all | limited | |
| Scallop Trawl | OPEN | NE | all | general | |
| Scallop Trawl | OPEN | NE | all | limited | |
| Shrimp Trawl | OPEN | MA | all | all | |
| Shrimp Trawl | OPEN | NE | all | all | 0.1 |
| Sink, Anchor, Drift Gillnet | OPEN | MA | small | all | |
| Sink, Anchor, Drift Gillnet | OPEN | MA | large | all | |
| Sink, Anchor, Drift Gillnet | OPEN | MA | xlg | all | 1.81 |
| Sink, Anchor, Drift Gillnet | OPEN | NE | small | all | |
| Sink, Anchor, Drift Gillnet | OPEN | NE | large | all | |
| Sink, Anchor, Drift Gillnet | OPEN | NE | xlg | all | 0.26 |
| Purse Seine | OPEN | MA | all | all | |
| Purse Seine | OPEN | NE | all | all | 0 |
| Scallop Dredge | CLOSED | MA | all | general | |
| Scallop Dredge | CLOSED | MA | all | limited | 790.91 |
| Scallop Dredge | CLOSED | NE | all | general | 124.85 |
| Scallop Dredge | CLOSED | NE | all | limited | 673.3 |
| Scallop Dredge | OPEN | MA | all | general | 105.69 |
| Scallop Dredge | OPEN | MA | all | limited | 2024.29 |
| Scallop Dredge | OPEN | NE | all | general | 499.72 |

| Gear Type | Access Area | Area Fished | Mesh Group | Trip Category | Sea Scallop |
|---|---|---|---|---|---|
| Scallop Dredge | OPEN | NE | all | limited | 1098.35 |
| Mid-water paired & single Trawl | OPEN | MA | all | all | 0 |
| Mid-water paired & single Trawl | OPEN | NE | all | all | 0 |
| | | | | | |
| | | | | ***Total Discards*** | 5891.45 |
| | | | | Non-Scallop Gear Totals | 124.12 |
| | | | | Non-Scallop percent | 0.02 |
| | | | | Total Commercial Landings (2005) | 24280 |
| | | | | Non-Scallop Gear Discards as Percent of Total Landings | 0.005112 |

### 3.2.3.11 ACLs set in other FMPs for the scallop fishery

To date the only ACL under another FMP that may be set for the scallop fishery is yellowtail flounder (all three stocks: GB, SNE/MA, and CC). Amendment 16 to the Multispecies FMP established an ACL sub-component for the scallop fishery because the scallop fleet accounts for over 5% of catch of YT flounder. The Groundfish Committee has considered other species, but no other species have been identified at this time. Section 3.2.3.11.1 below describes the data the Scallop PDT used to highlight species that may need to be considered at some point, but YTF will have the only non-target ACL the Scallop FMP will consider.

The Skate FMP has not identified a sub-ACL for the scallop fishery, so Amendment 15 will not consider details of a skate ACL for the scallop fishery. In addition, the ACL amendment for the Monkfish FMP has not been developed yet. However, if the Monkfish FMP determines that a sub-ACL should be considered for the scallop fishery, the details of that ACL will be developed in the Monkfish FMP. Lastly, the Scallop PDT has identified fluke (summer flounder) as a potential species that is caught in the scallop fishery as bycatch. The action to implement ACLs for the fluke fishery has not been developed yet, but if ACLs are considered for the scallop fishery in that FMP, then a subsequent scallop action would include details about that ACL. In summary, when an FMP identifies an ACL for the scallop fishery, a subsequent scallop action will address the assigned ACLs and consider corresponding AMs.

#### 3.2.3.11.1 Analysis used to identify potential non-target species

To identify potential non-target species caught incidentally in the scallop fishery, the Scallop PDT considered discard info from the 2008 SBRM report, Wigley et al. 2008, and various assessments such as GARM III and the Skates Datapoor Workshop (Table 16). A note of caution in just using the 2008 SBRM data was that it was not extrapolated out to the entire fisheries. Therefore, fisheries with higher observer coverage, such as the scallop fishery, appeared to have more bycatch than other fisheries. The PDT discussed that if an "appreciable" amount of total discards is from scallop gears, then a non-target ACL may be warranted. The PDT discussed that more than 5% of total landings caught as discards in the scallop fishery would qualify as appreciable for this case. As a starting point, the PDT looked at the 2008 SBRM report. Based on that report in which 2007/8 data was compiled, the species with more than 5% of total estimated catch from discards in the scallop fishery are: fluke, winter flounder, monkfish, barndoor skates, little skates, unidentified skates, surfclams, and ocean quahogs. These species were narrowed down by looking at the report presented by Wigley et al. (2008).

While it is based on 2005 data, it is extrapolated out across fisheries such that a consistent conclusion can be made. Based on this report, the PDT identified the following species as having more than 5% of total estimated catch from discards in the scallop fishery: monkfish, skates (overall), windowpane flounder (Table 17).

In addition to the snapshot of information available from the 2008 SBRM process and Wigley et al. (2008), the PDT also reviewed discard info for the scallop fishery in recent assessments for the species listed above. GARM III for multispecies identified that the scallop fishery caught more than 5% of the bycatch (compared to overall catch) for some species by region (Table 17). Georges Bank (GB) and Southern New England (SNE) yellowtail flounder were caught in amounts greater than 5%, but the Cape Cod yellowtail only has occasional spikes over 5%. GB winter flounder has catch over 5%, but neither SNE nor Gulf of Maine (GOM) winter flounder is caught appreciably. Although there is greater than 5% caught in both the GB/GOM and SNE regions for windowpane flounder, the catch is generally higher in SNE. The Skates Datapoor Working Group identified the greatest bycatch for the scallop fishery of little and winter skates. Lastly, when extrapolated out across the entire fishery, the ocean quahog and surfclam assessments show close to zero bycatch of these species by the scallop fishery. While not included in the following tables, the PDT also discussed in general that other species to keep in mind for the future may be 4-spot flounder and Icelandic scallops.

The PDT recommends that this action only considers ACLs for non-target species that have been first identified by the primary FMP that manages that species. For example, while the scallop fishery catches several groundfish species, the only species identified by the Groundfish FMP that requires an ACL for the scallop fishery is CC, SNE/MA, and GB YT. Likewise, unless the Monkfish, Skate, and/or Summer Flounder FMPs identify that a sub-ACL should be allocated to the scallop fishery, no ACL or AM measures will be considered for those non-target species in this action. It is possible that the Scallop FMP will have to consider ACL and AM measures for other species in the future if the primary FMP first identifies it as necessary.

**Table 16 – Summary of discards by species in scallop gear types (Based on 2005 observer data presented in Wigley et al. 2008)**

| Species | Fishery Landings + discards | Scallop Fishery Total | Scallop Overall Percent | |
|---|---|---|---|---|
| Bluefish | 3,058 | 0 | 0 | |
| Atlantic Herring | 100,071 | 0.05 | 0.0 | |
| Atlantic Salmon | 0 | 0 | | |
| Deep Sea Red Crab | 2,117 | 0.14 | 0.0 | * |
| Atl. Sea Scallop | 219,901 | 5767.33 | 2.6 | |
| Atl. Mackerel | 43,780 | 1.42 | 0.0 | |
| Illex Squid | 13,623 | 1.61 | 0.0 | ** |
| Loligo Squid | 17,890 | 3.48 | 0.0 | ** |
| Butterfish | 1,422 | 0.14 | 0.0 | |
| Monkfish | 23,154 | 2563.1 | 11.1 | |
| Atl. Cod | 7,182 | 2.63 | 0.0 | |
| Haddock | 8,121 | 3.54 | 0.0 | |
| Yellowtail Flounder | 4,803 | 229.07 | 4.8 | |
| American Plaice | 1,652 | 8.35 | 0.5 | |
| Witch Flounder | 2,940 | 48.63 | 1.7 | |

| | | | | |
|---|---|---|---|---|
| Winter Flounder | 4,026 | 118 | 2.9 | |
| Pollock | 6,580 | 0.03 | 0.0 | |
| Acadian Redfish | 648 | 0.32 | 0.0 | |
| White Hake | 2,809 | 5.43 | 0.2 | ** |
| Windowpane Flounder | 935 | 164.81 | 17.6 | |
| Atl. Halibut | 31 | 0.01 | 0.0 | |
| Ocean Pout | 161 | 4.44 | 2.8 | |
| Silver Hake | 10,257 | 17.34 | 0.2 | |
| Offshore Hake | 24 | 0 | 0 | ** |
| Red Hake | 1,959 | 61.72 | 3.2 | ** |
| Skates | 50,168 | 10697.41 | 21.3 | |
| Spiny Dogfish | 5,489 | 47.07 | 0.9 | |
| Summer Flounder | 9,005 | 381.53 | 4.2 | |
| Scup | 4,815 | 1.47 | 0.0 | |
| Black Sea Bass | 1,395 | 4.76 | 0.3 | |
| Atlantic Surfclam | 140,886 | 13.55 | 0.0 | * |
| Ocean Quahog | 113,857 | 57.48 | 0.1 | * |
| Tilefish | 706 | 0 | 0 | |

* These species have gear-specific, directed fisheries that were not observed in 2005
** Potential "mixed" species: squid unknown, and red, offshore, and white hake mix.

**Table 17 – Summary of discards by species in scallop gear types (Based GARM III analyses, except for skates)**

| Species | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GB Yellowtail flounder | 9.6 | 14.1 | 23.6 | 16.4 | 0.8 | 1.1 | 8.0 | 1.3 | 5.2 | 15.9 | 7.7 |
| SNE Yellowtail flounder | 17.0 | 11.8 | 9.9 | 9.4 | 1.5 | 2.3 | 10.6 | 3.1 | 18.5 | 19.2 | 23.0 |
| CC/GOM Yellowtail flounder | 21.0 | 14.1 | 1.9 | 1.0 | 3.7 | 0.6 | 1.2 | 1.4 | 0.4 | 0.6 | 5.4 |
| GB Winter flounder | 4.8 | 3.5 | 3.7 | 2.6 | 0.4 | 0.7 | 0.1 | 0.2 | 4.0 | 6.9 | 13.2 |
| GB/GOM Windowpane flounder | 19.5 | 10.5 | 5.6 | 6.0 | 9.9 | 12.7 | 3.0 | 2.2 | 1.8 | 11.1 | 9.4 |
| SNE Windowpane flounder | 44.4 | 28.4 | 23.6 | 9.9 | 3.9 | 18.2 | 15.8 | 10.5 | 32.8 | 15.6 | 17.9 |
| Skate Complex* | 41.3 | 19.0 | 35.3 | 20.4 | 13.7 | 26.3 | 23.1 | 15.2 | 17.8 | 20.4 | 20.5 |

* Data is from the Skate Datapoor Workshop

### 3.2.3.11.2 Yellowtail flounder

As proposed in Amendment 16 to the Multispecies FMP, yellowtail flounder caught in the scallop fishery will be initially treated as an "other sub-component" of the ACL for all three yellowtail flounder stocks (Figure 4). Scallop Amendment 15 (this action) will identify AMs for the catch of yellowtail flounder in the scallop fishery. Once these AMs are specified, yellowtail flounder caught in the scallop fishery will be considered a sub-ACL controlled by an AM. It is expected that the first groundfish fishing year that this will occur is FY 2011, after implementation of Scallop Amendment 15. If scallop Amendment 15 adopts an in-season AM, then these AMs might be triggered in groundfish fishing year 2011; if in-season AMs are not adopted, then any overage of the FY 2011 ACL would be addressed by AMs implemented in scallop FY 2012 or later.

The specific value for a yellowtail flounder ACL is not specified in either Multispecies Amendment 16 or Scallop Amendment 15 because this will be determined as part of the adjustment process under the Multispecies plan. Catches of regulated groundfish in the scallop fisheries depend on a wide range of factors including scallop and groundfish abundance, the scallop rotational management program, etc. These factors are variable and cannot be predicted with certainty until closer to the start of both the scallop and multispecies fishing years. The amount of yellowtail flounder allowed for the scallop dredge fishery will, at a minimum, be consistent with the incidental catch amounts for the closed area access programs (ten percent of the GB yellowtail flounder and SNE/MA yellowtail flounder ACL when CAI, CAII, or the NLCA access programs are in effect).

Nothing in Amendment 16 changes the current regulations that limit scallop catch to 10% of the total YT TAC (or in the future ACL). So unless something is changed the scallop fishery will still be limited to 10% in access areas, regardless if more of the total ACL is allocated to the scallop fishery. The Scallop Committee passed a motion on September 1, 2009 to “recommend that the Council consider addressing the 10% limit on YT bycatch in access areas in FW21 or FW22, depending on staff resources.” At the January 2010 meeting the Council decided to form a Groundfish/Scallop Committee with the expressed purpose of dealing with allocation of yellowtail flounder to the scallop fishery. It is not yet clear which types of measures will be considered in this joint action, or if they will be developed separately under each FMP.

Amendment 16 to the Multispecies FMP was implemented in May 2010. Since Amendment 16 identifies the scallop fishery as an “other sub-component” of the YT ACL, YT catch in the scallop fishery will need to be factored in when setting the YT ACL for the multispecies fishery. The amount of YT allocated to the scallop sub-component will not officially be an ACL until 2011 after Amendment 15 is implemented, but it is still necessary to identify how much YT catch is expected in the scallop fishery in 2010, so an allocation decision can be made in the specifications package for the Multispecies FMP. The multispecies specifications package includes measures for 2010 and 2011, as well as 2012. Therefore, the Scallop PDT worked with the Groundfish PDT to assess expected YT catch in the scallop fishery for the next few fishing years. Then the Council identified how much YT (for all three stocks) should be allocated to the scallop fishery as an “other-sub-component” of the overall YT ACL. They chose to allocate 100% of yellowtail ‘needed’ in 2010, and 90% in 2011 and 2012, and these allocations are included in the multispecies specification package in Multispecies Framework 44. These values recognize the importance of yellowtail flounder to the scallop fishery and provide an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. The values for 2011 and 2012 can be adjusted if there is new information regarding scallop and yellowtail stocks, or based on access area measures in the scallop fishery for those years. Framework 44 also requires all legal-sized yellowtail flounder caught in the scallop fishery to be landed. Framework 45 will review these allocations, and based on changes in projected scallop catch considered for fishing years 2011 and 2012 (Framework 22) and updated yellowtail flounder biomass values, the YT sub component allocation to the scallop fishery may be revised.

Framework 21 to the Scallop FMP sets scallop specifications for 2010, and the YT-related decisions described in this section affected the alternatives that were under consideration in Framework 21 as well. The YT allocations for the scallop fishery in 2010, 2011, and 2012 are given in Table 18. The Council decided not to have a separate allocation for the CC/GOM YT stock for the scallop fishery because estimated levels of catch from that stock are relatively low. This may be changed in the future if it is deemed necessary to include CC/GOM YT as part of the sub-ACL. It should be noted that 2010 is a complex year because the scallop fishery will be treated as a sub-component and will receive an allocation of YT, but it is not an ACL, and therefore does not trigger the requirement to have specific AMs. Without specific measures to address an overage of the subcomponent allocation, if the total YT ACL is exceeded (e.g., due to over-harvest relative to the subcomponent YT allocation), AMs would be triggered under the NE Multispecies FMP for the Groundfish fishery since AMs are not in place for the scallop fishery. To address this issue, the Council decided at its November 2009 Council meeting to direct the Scallop Committee to develop a measure in Amendment 15 that would specify how overages of 2010 YT subcomponent catch could be addressed under the Scallop FMP. Specifically, if the 2010 total ACL is exceeded because the scallop fishery exceeded their sub-component allocation, AMs would be implemented under A15 that would reach back to address the overage, rather than reduce catch for the multispecies fishery.

**Process for setting YT sub-ACLs**

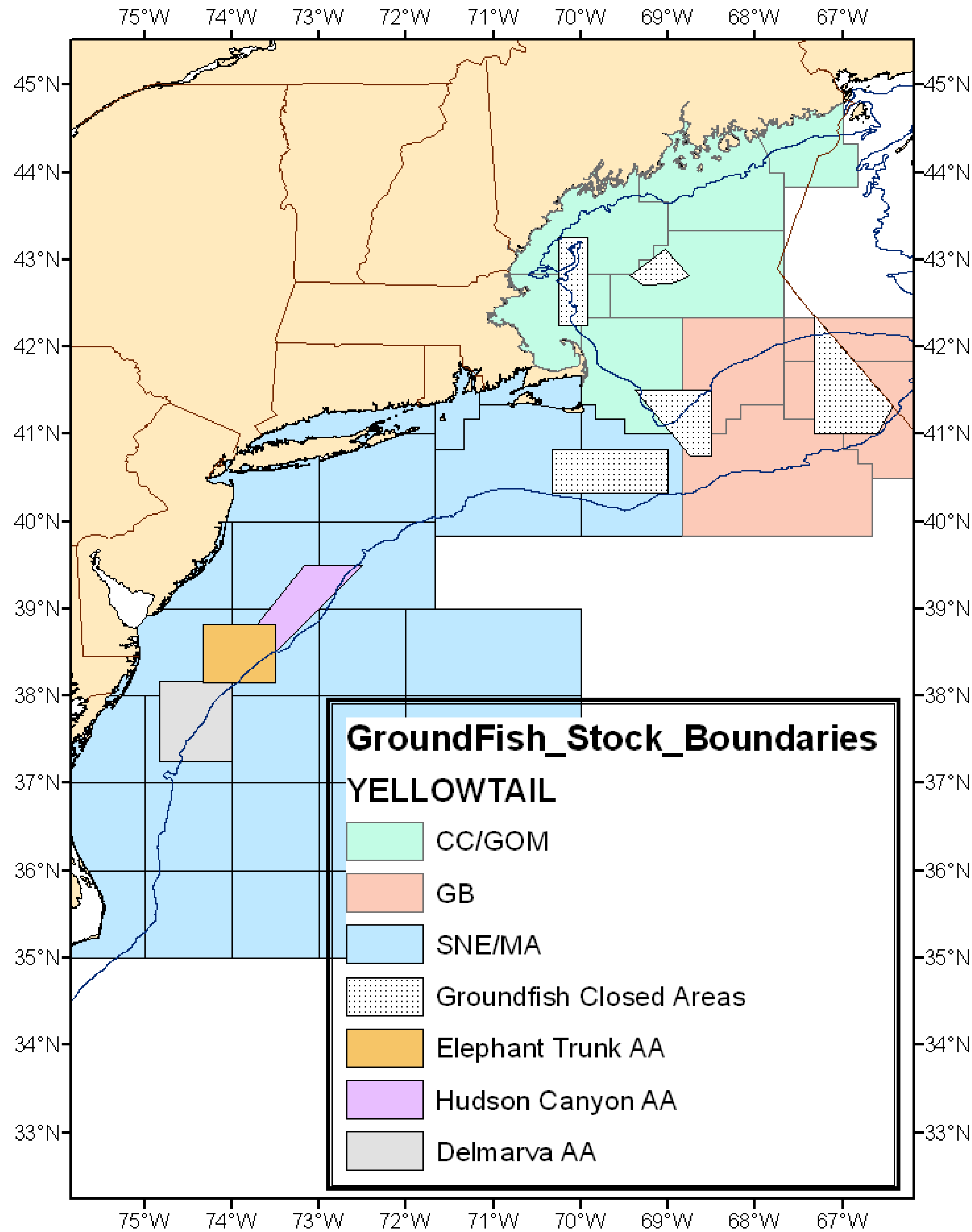
In general, once Amendment 15 is implemented and the YT sub-component becomes a sub-ACL, the process for setting this sub-ACL will be as follows. For SNE/MA YT the total YT ACL will be identified by the Groundfish PDT the summer before the ACL is to be in place. The Scallop PDT will provide expected DAS allocations and access area schedules for several years out. The PDTs will provide a recommendation to the Groundfish Committee and the percent allocated to the scallop sub-ACL will be considered in the multispecies specifications package for those fishing years, usually two or three years at a time. The scallop specification packages will identify scallop management measures around these decisions in the case that scallop measures have to be modified based on the amount of YT allocated to the scallop fishery.

For GB YT the process is more complex because that resource is in both US and Canadian waters and a sharing agreement has been established between the two countries that sets a total combined TAC for GB YT and identifies how much each country can harvest. The Transboundary Resources Assessment Committee (TRAC) holds annual meetings (typically in June) to review updated science and make a recommendation about an appropriate TAC for YT. Results are available by July 1, and the Transboundary Management Guidance Committee (TMGC, a policy group made up of representatives from Canada and the US) decides what the total TAC will be and what share each country will receive. The TMGC generally meets in September each year. After the TMGC decision the Council will know how much GB YT is available for the following fishing year. These results are then available for the Council to use in relative multispecies and scallop actions.

**Table 18 - YT sub-components (2010) and ACLs (2011 and 2012) allocated to the scallop fishery 2010-2012 (in mt) as specified in Multispecies Framework 44 and Scallop Framework 21. The Council decided not to include an allocation in the CC/GOM stock area.**

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| GB | 146 | 201 | 307 |
| SNEMA | 135 | 82 | 127 |

**Figure 4 – Yellowtail flounder stock areas (GOM/CC, GB, and SNE/MA)**



**<u>Accountability measures (AMs) in the scallop fishery for YT sub-ACL</u>**

The PDT developed several alternatives below for the Scallop Committee and Council to consider. Ultimately, the PDT recommended that the stock-wide ACL for each YT species be applied to the full stock area, and it would be more advantageous to have AMs applied to open areas rather than access areas. If possible, the PDT recommended that access area programs within YT stock areas should not be impacted when possible to optimize scallop yield from area rotation. Since one goal of the Scallop FMP is to keep scallop fishing in areas with high catch per unit of effort, if the total YT sub-ACL is exceeded, it would be more advantageous from a scallop yield perspective if open area DAS in that stock area should be limited or reduced to account for any overages. While these were the overall recommendations from the PDT in terms of alternatives that would have the least impact on scallop yield, these concepts are not consistent with many of the options developed since preventing impacts on access area effort is unavoidable in some cases since those areas overlap with areas with higher YT bycatch rates.

The PDT discussed that with current monitoring systems, a YT sub-ACL AM may need to be in subsequent fishing years, not in-season. However, both types of AMs are considered in this action.

When the DEIS was approved by the Council this sub-ACL was for the entire scallop fishery – both LA and LAGC. The DEIS did not include alternatives that would further divide the sub-ACL allocated to the scallop fishery due to concerns raised about being able to effectively monitor such small bycatch allocations. For example, if the LAGC fishery was allocated 5.5% of the 2011 SNE YT sub-ACL that would be equivalent to 4.5 mt.(5.5% of 82 mt.). However, when the Council approved Amendment 15 for final action it included a provision that general category vessels would be exempt from the proposed action if a seasonal closure overlapped with an exempted area. Therefore, the LA and LAGC fisheries are not allocated separate YT sub-ACL, rather the Council decided that LAGC vessels should be exempt from the scallop fishery YT sub-ACL since they account for such a small amount of the total YT bycatch. Bycatch from the LAGC fishery will count against the scallop fishery sub-ACL, but that fleet will not be subject to accountability measures.

#### 3.2.3.11.2.1.1 Seasonal closure of a portion of the stock area pre-identified as having high bycatch rates (proposed action)

Under this alternative, the PDT pre-identified areas that have higher bycatch rates within each YT stock area and only those areas would close. Ideally, these areas would be as small as possible and include areas with the highest bycatch rates only. Unfortunately, for the time being the smallest unit of area current data support is by statistical area.

*<u>Which Areas?</u>*

In order to identify which specific areas within the yellowtail stocks should close as a result of the AM, data from the Northeast Fisheries Observer Program was used. Using scallop and yellowtail catch from 2006-2008 for all gear types and both LA and LAGC fisheries separated by statistical area, the average annual catch of scallops in pounds was multiplied by the average annual discard rate (discarded yellowtail flounder/kept scallops). This method links back how much is gained by closing an area in terms of scallop catch. The statistical areas with the highest bycatch rates in the SNE/MA area are 539, 537, and 613, which comprise 26.7% of the yellowtail bycatch from the stock area, but only 6.7% of the scallop catch. On Georges Bank, the statistical area with the highest yellowtail catch (39.1%) is also a productive scallop area (36.8%) (Table 19). Closing the next statistical area with the highest discard rate in GB, area 525, would include over 80% of YT catch, but 66.7% of scallop catch. The statistical areas to be closed for both yellowtail stock areas are highlighted in Figure 5.

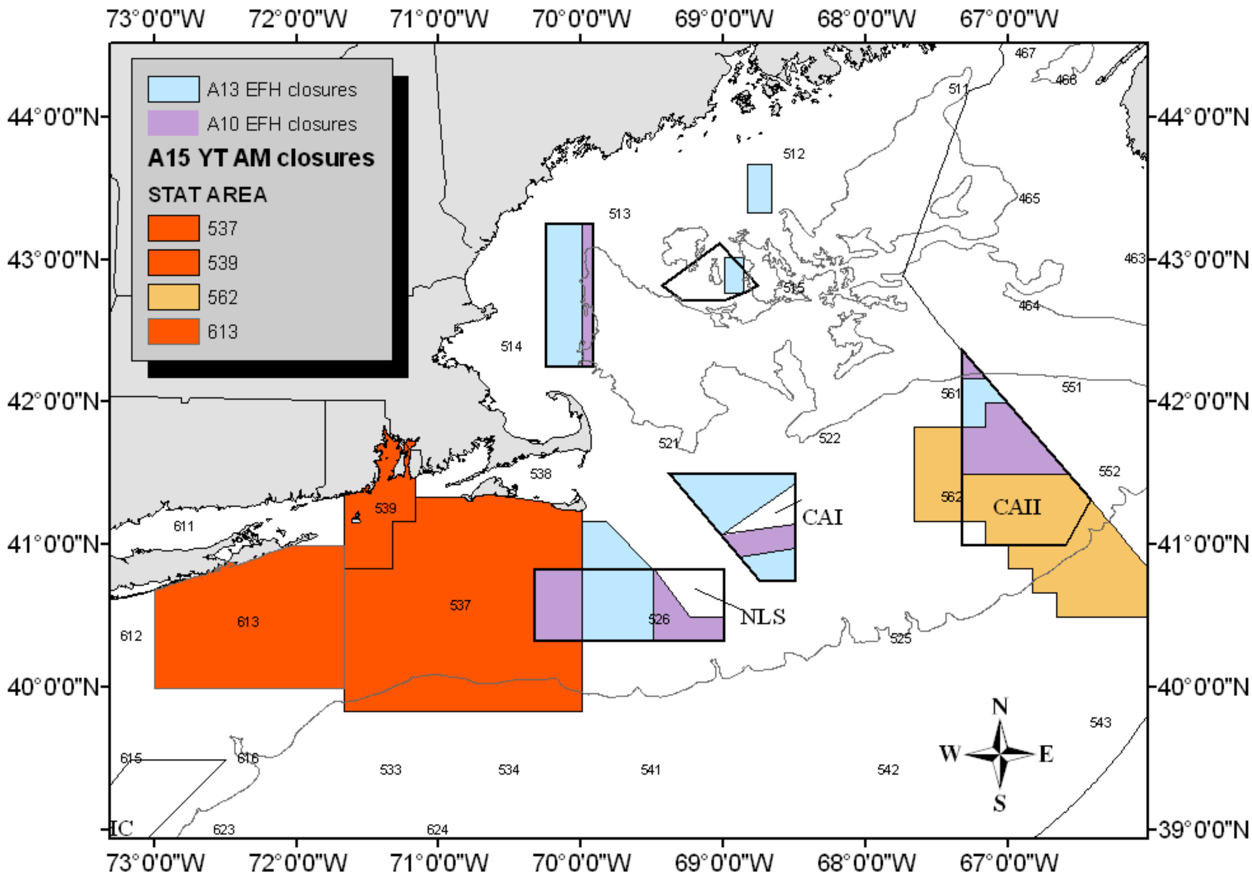
Currently, the entire statistical area would close upon trigger of the AM on Georges Bank, which includes the access area of Closed Area II, as well as some portions of the open areas surrounding Closed Area II. There is only a small part of the CA2 access area that is not within statistical area 562; the southwest corner is within 525. However, there are different AM schedules for how long an area closes depending on whether CA2 is open to the scallop fishery or not. Therefore, in years when an AM is triggered, and CA2 is open to the scallop fishery, the entire access area is closed to the scallop fishery until the AM schedule declares it open based on the amount of YT bycatch overage. This is consistent with the final Council motion because the figure used in the DEIS actually showed that all of CA2 access area was in statistical area 562, and was shaded as part of the YT AM area. Figure 5 was updated for the FEIS to show the small portion of the CA2 access area that is not in statistical area 562 (the AM area), but the intent of the Council was that the entire access area would be subject to the AM. To be clear, vessels would not be permitted to fish in the small part of the CA2 access area in 525 if the AM is triggered. The entire access area would reopen to scallop vessels based on the schedule of the AM closure.

On the other hand, if the Southern New England AM were triggered, the NLCA access area would not close because it is not in the statistical area that has been identified as having highest bycatch with low scallop catch.

**Table 19 – Cumulative % of YT and scallop catch per stock area by statistical area. Shaded rows are statistical areas proposed for the YT AM for each YT stock area**

| | Stat area | Avg D/K rate | Cum %YT | Cum % Scallop |
|---|---|---|---|---|
| GB | 562 | 0.29598 | 39.10% | 36.79% |
| | 525 | 0.06980 | 80.13% | 66.76% |
| | 561 | 0.02356 | 85.61% | 78.67% |
| | 522 | 0.01874 | 100.00% | 100.00% |
| SNEMA | 539 | 0.05669 | 5.31% | 0.58% |
| | 537 | 0.02820 | 9.56% | 1.51% |
| | 613 | 0.02032 | 26.66% | 6.69% |
| | 526 | 0.01449 | 83.10% | 30.72% |
| | 612 | 0.00714 | 89.47% | 36.22% |
| | 615 | 0.00292 | 96.50% | 51.07% |
| | 616 | 0.00237 | 99.56% | 59.04% |
| | 622 | 0.00013 | 99.86% | 73.55% |
| | 621 | 0.00004 | 100.00% | 96.65% |
| | 614 | 0.00000 | 100.00% | 96.99% |
| | 623 | 0.00000 | 100.00% | 97.13% |
| | 625 | 0.00000 | 100.00% | 97.22% |
| | 626 | 0.00000 | 100.00% | 99.39% |
| | 627 | 0.00000 | 100.00% | 99.47% |
| | 632 | 0.00000 | 100.00% | 99.83% |
| | 633 | 0.00000 | 100.00% | 100.00% |

**Figure 5- Map showing statistical areas subject to closure under Option A of this alternative**
**Orange is SNE/MA stock area, and yellow is GB. Note that GB AM area includes the access area in CA2.**



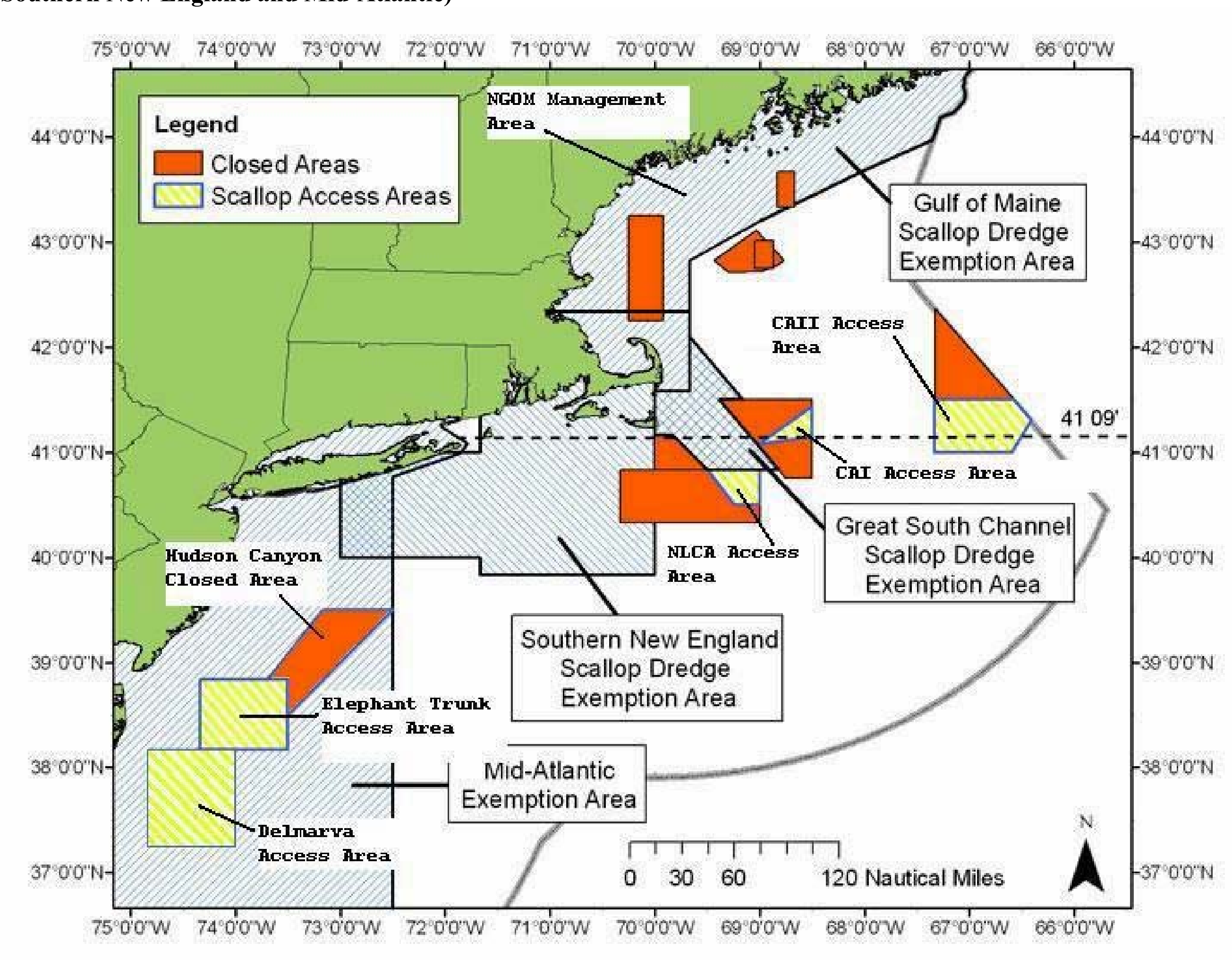

*Closed to Whom?*

At the November 2010 Council meeting the Council decided that the statistical areas included in each YT AM would close to limited access only; general category vessels are exempt from these closures if fishing in an exempted area (Figure 6). The Council recommended that general category vessels should be exempt from these closures because one of the closure areas encompasses a large part of the Southern New England LAGC fishery, and because that fleet as a whole catches a relatively small amount of the total YT bycatch in the scallop fishery. The Council clarified that the exemption was limited to fishing in exempted areas only. To be clear, being exempt from this AM does not allow general category vessels to fish in areas they do not already have access to. For example, the access area in Closed Area II is not in a general category exemption area, so if the AM is triggered for the GB YT stock, general category vessels would not be able to fish in that access area if it is closed as an AM. Furthermore, if the current YT AM areas change in the future and do not overlap with a current general category exemption area; for example, north of Closed Area I, general category vessels would not be able to fish in that area just because they are exempt from the YT AM. General category vessels are only exempt from YT AM closures that overlap with current exemption areas specified in the Multispecies Plan (GOM, Great South Channel, SNE and MA scallop dredge exemption areas).

The current SNE/MA YT AM closure that includes all of statistical area 613, which overlaps with both the MA and SNE scallop exemption area would be open to general category vessels if closed as a YT AM to the limited access fishery.

While the areas do not close to general category vessels if an AM is triggered, the YT catch from general category vessels during the year will count toward the sub-ACL for the scallop fishery. Currently mortality from both LA and LACG vessels on YT are accounted for under the sub-ACL allocated to the scallop fishery since that allocation is originally based on a projection of YT catch for the fleets combined. The estimate of YT catch from the scallop fishery that is used to calculate the sub-ACL allocated to the fishery is for the scallop fishery overall; it does not distinguish between LA and LAGC vessels.

**Figure 6 – Scallop dredge exemption areas for general category vessels (Gulf of Maine, Great South Channel, Southern New England and Mid-Atlantic)**



*When does an area close?*
The DEIS originally considered two alternatives: in-season and Year 3. Based on concerns raised in public comments and feedback from the Groundfish PDT the Council developed a subsequent year option (Option C) for the proposed action, see below.

- *Option A - in-season*

During the year, YT bycatch would be monitored by stock area, including projected catch in both open and access areas. When the agency projects that 95% (or whatever is decided based on desired precaution level) of the total YT sub-ACL has been harvested, specific pre-identified areas within that stock area would close to the scallop fishery to reduce YT catch.

In terms of monitoring for this AM, trip by trip declarations would be necessary using expansion of VMS declaration codes and flexibility to switch areas while at sea. This is an important issue for vessels that want more flexibility to move away from high concentrations of yellowtail without having to come back to port. The Council could set the AM trigger monitoring level at 100% in order to maximize fishing time. However, closure at 100% means that we are projecting to 100% and that the closure stops all fishing at the projected date, and projections may not be this certain. The RA has the authority to modify the provisions for a specific TAC if it is progressing too rapidly, and FSO adapts their monitoring and projection scheme to address the specific fishery provisions. As it stands, NMFS will monitor the fishery and project when 100% would be caught (when the fishery would close or other action depending on what the Amendment 15 alternative chosen is). The Council could recommend a more precautionary trigger (i.e. 80%, 90%, etc.) to ensure that the TAC is not exceeded.

- *Option B – AM effective in year 3*

During the year, YT bycatch would be monitored by stock area, including projected catch in both open and access areas. At the end of the fishing year NMFS will determine the total YT caught in each stock area. If a YT sub-ACL is exceeded, pre-identified areas within that stock area would close to the scallop fishery at the beginning of the year in Year 3, not the subsequent fishing year because data will not be available in time to have measures in place by the start of the scallop fishing year.

It may be possible that those areas within the stock area could re-open later during the third year if the ACL was not exceeded by a large amount; it may not be necessary to keep the areas closed for the full fishing year. This AM would also require trip by trip declarations for monitoring purposes.

- *Option C – AM effective in subsequent year (proposed action)*

During the year vessels will be reporting YT and scallop catch by YT stock area through VMS. At the same time NFMS will determine if the YT sub-ACL will be exceeded based on projections of total YT catch on scallop vessels. The method that will be used is the same one NMFS uses to determine if the common pool sub-ACL has been exceeded in the groundfish fishery. By January 15, 1.5 months before the end of each scallop fishing year, the Regional Administrator will determine if either YT sub-ACL will be exceeded, and notify permit holders as soon as possible thereafter. In the case of a trigger, the statistical areas specified in this action will be closed to scallop fishing on March 1 of the following fishing year and remain closed for the length of time specified in Table 28 for the SNE/MA YT stock area and Table 35 for the GB YT stock area with CAII is open and Table 36 for the GB YT stock area with CAII is closed. The areas and times may potentially be refined in future scallop actions.

*How long is an area closed for?*
By January 15 of each year, NMFS will determine if either YT sub-ACL will be exceeded by the scallop fishery. Catch from both LA and LAGC vessels will be included in the projection. If the projection suggests that the sub-ACL will be exceeded, NMFS will identify by how much in terms of a percentage of the total sub-ACL. For example, if the sub-ACL in SNE/MA was 100 mt., and the scallop fishery is projected to catch 115 mt., that is equivalent to a 15% overage.

At first this approach is going to be very simple in terms using a formula that will identify how long an area should be closed for. Ideally, when more data are available the times and areas that will be closed as AMs will be smaller and more closely linked to seasons with higher bycatch rates.

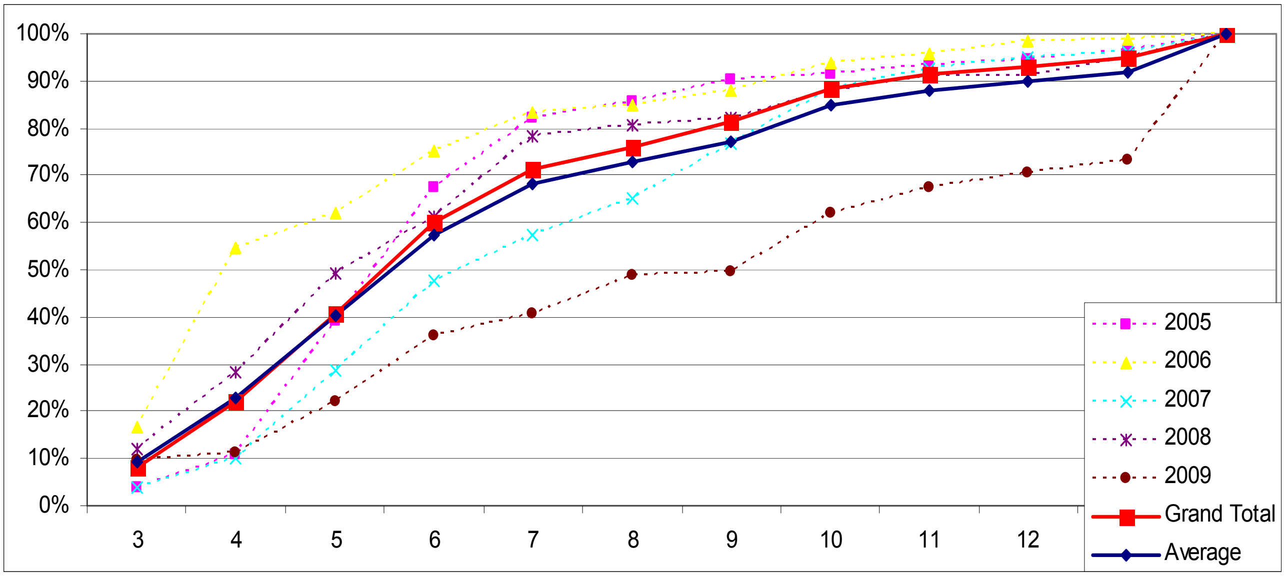
- ***SNE/MA YT AM***

Using data provided by NERO, the landings of scallops by limited access vessels were determined for statistical areas 537/539/613 (the area for the YTF AM). They were summarized by FY. The distribution of landings is similar for FY 2005 – 2008 but changed in FY 2009. Landings for general category vessels were not included because general category vessels are not subject to the YT AM if fishing in exemption areas.

**Table 20 – Landings (scallop meat weights, lbs. by limited access scallop trips in SA 537/539/613 for FY 2005-2009.**

| MONTH | 2005 | 2006 | 2007 | 2008 | 2009 | Grand Total | Average |
|---|---|---|---|---|---|---|---|
| 3 | 141,139 | 426,543 | 131,878 | 120,467 | 91,789 | 911,815 | 182,363 |
| 4 | 246,435 | 966,381 | 200,351 | 162,311 | 15,393 | 1,590,871 | 318,174 |
| 5 | 986,755 | 184,383 | 627,176 | 210,222 | 101,944 | 2,110,478 | 422,096 |
| 6 | 988,646 | 333,687 | 639,642 | 117,914 | 134,710 | 2,214,598 | 442,920 |
| 7 | 528,336 | 208,500 | 315,588 | 170,135 | 44,127 | 1,266,685 | 253,337 |
| 8 | 116,000 | 36,841 | 266,681 | 24,338 | 76,340 | 520,200 | 104,040 |
| 9 | 163,210 | 78,651 | 385,185 | 14,777 | 7,183 | 649,007 | 129,801 |
| 10 | 47,672 | 146,075 | 396,539 | 59,828 | 120,373 | 770,487 | 154,097 |
| 11 | 60,207 | 53,955 | 143,410 | 31,812 | 50,387 | 339,770 | 67,954 |
| 12 | 38,970 | 63,140 | 69,521 | | 30,777 | 202,408 | 50,602 |
| 1 | 73,836 | 14,974 | 42,718 | 37,957 | 26,066 | 195,551 | 39,110 |
| 2 | 120,389 | 28,906 | 129,259 | 50,188 | 254,452 | 583,195 | 116,639 |
| Grand Total | 3,511,595 | 2,542,035 | 3,347,946 | 999,949 | 953,540 | 11,355,065 | 2,271,013 |

**Figure 7 – Cumulative distribution of scallop landings by limited access vessels in SA 537/539/613 for FY 2005 – 2009.**




Observer data was queried to determine the ratio for the catch of yellowtail flounder to the kept scallop meat weights for limited access trips in the SNE/MA yellowtail flounder stock area. The data was also summarized for the ratios for the proposed SNE/MA AM area (SAs 537/539/613). The ratios were calculated several different ways: individual by month, cumulative by month (ratio is calculated using all data available through the end of a month), semi-annual (based on FY), and annual (based on FY). Note the annual ratio is the same as the cumulative ratio by month in the last month of the FY. Rates are shown in the following tables and Figure 8. The monthly ratios are lower in the summer/early fall months (July-October) than at other times of the year.

In the AM area there were many months without any observations on limited access trips. From November in FY 2005 through August in FY 2006 there weren't any observed limited access trips in the AM area. While this is not a heavily fished area historically, there are always trips in this area and the reason there were no observations is not because no trips were taken, but for that period of time NMFS was unable to require vessel owners to pay for observers as a result of unresolved legal issues concerning the use of a contract between NMFS and the observer service provider while requiring vessel owners to pay for the observers. The program was later -activated but included a mechanism to certify non-contracted observer service providers. Even though these years have limited data it is still preferable to include them rather than leave them out.

**Table 21 – Catch of YTF:Kept scallops for observed limited access trips: ratios for each month; FY.**

| MONTH | 2005 | 2006 | 2007 | 2008 | 2009 | Pooled Data | Average |
|---|---|---|---|---|---|---|---|
| 03 | 0.017525701 | | 0 | 0.060335046 | 0.072743273 | 0.059108169 | 0.037651 |
| 04 | | | 0.011848348 | 0.085538237 | 0 | 0.035753769 | 0.032462 |
| 05 | 5.13653E-05 | | | 0.10762221 | 0.003560422 | 0.005318089 | 0.037078 |
| 06 | 0 | | 0.023752274 | 0.042458822 | 0.036534485 | 0.016718691 | 0.025686 |
| 07 | 0 | | 0.007963981 | 0.010018098 | | 0.005394306 | 0.005994 |
| 08 | 0.000502917 | | 0.002245246 | 0.00993738 | | 0.00130828 | 0.004229 |
| 09 | | 0.020356458 | 0.015808074 | 0.010732411 | 0.007713121 | 0.014491719 | 0.013653 |
| 10 | 0.014659957 | 0.003586336 | 0.02569929 | 0.007143776 | 0.00173339 | 0.007490986 | 0.010565 |
| 11 | | 0.004056804 | 0.050090917 | | 0.072462316 | 0.021421395 | 0.042203 |
| 12 | | 0.011600416 | 0.013075415 | 0.032068495 | | 0.015713772 | 0.018915 |
| 01 | | 0.000445924 | 0.011976797 | 0.035432556 | | 0.033429007 | 0.015952 |
| 02 | | 0.047735269 | 0.037379289 | 0.023565722 | | 0.040139739 | 0.036227 |

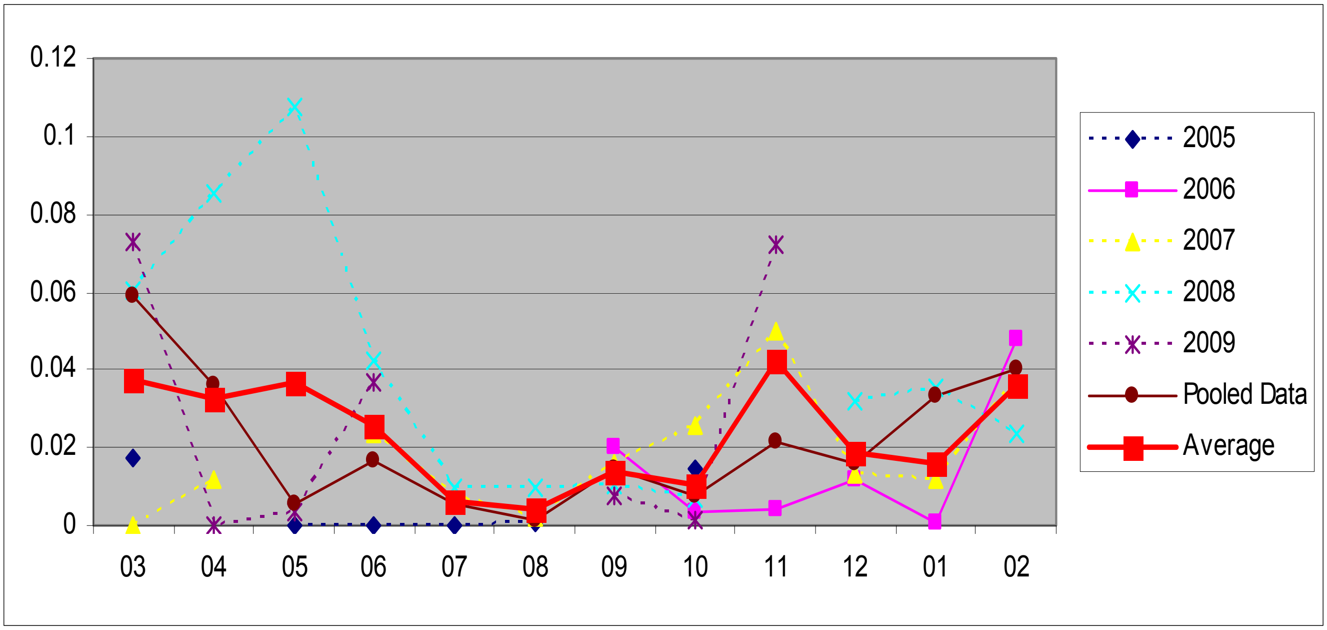
**Table 22 - Catch of YTF:Kept scallops for observed limited access trips: cumulative ratios; FY.**

| MONTH | 2005 | 2006 | 2007 | 2008 | 2009 | Pooled Data | Average |
|---|---|---|---|---|---|---|---|
| 03 | 0.017525701 | | 0 | 0.060335046 | 0.072743273 | 0.059108169 | 0.037651 |
| 04 | 0.017525701 | | 0.011701349 | 0.0694605 | 0.055948143 | 0.046170787 | 0.038659 |
| 05 | 0.00047611 | | 0.011701349 | 0.073944429 | 0.027974432 | 0.021881768 | 0.028524 |
| 06 | 0.000338326 | | 0.01753401 | 0.06517614 | 0.029270448 | 0.020267195 | 0.02808 |
| 07 | 0.00030178 | | 0.014334667 | 0.060704822 | 0.029270448 | 0.0180416 | 0.026153 |
| 08 | 0.000379644 | | 0.013378047 | 0.054918583 | 0.029270448 | 0.013661258 | 0.024487 |
| 09 | 0.000379644 | 0.020356458 | 0.014372149 | 0.046939414 | 0.026468325 | 0.013788783 | 0.021703 |
| 10 | 0.000526053 | 0.00573323 | 0.01478959 | 0.039021905 | 0.017756608 | 0.013205695 | 0.015565 |
| 11 | 0.000526053 | 0.004344956 | 0.016549947 | 0.039021905 | 0.030214608 | 0.014050468 | 0.018131 |
| 12 | 0.000526053 | 0.005491388 | 0.015865842 | 0.038524477 | 0.030214608 | 0.014188591 | 0.018124 |
| 01 | 0.000526053 | 0.005097929 | 0.015784085 | 0.036896206 | 0.030214608 | 0.017550736 | 0.017704 |
| 02 | 0.000526053 | 0.014922352 | 0.019925837 | 0.03679371 | 0.030214608 | 0.019303715 | 0.020477 |

**Table 23 - Catch of YTF:Kept scallops for observed limited access trips: half year; FY.**

| MONTH | 2005 | 2006 | 2007 | 2008 | 2009 | Pooled Data | Average |
|---|---|---|---|---|---|---|---|
| First | 0.000379644 | | 0.013378047 | 0.054918583 | 0.029270448 | 0.013661258 | 0.024487 |
| Second | 0.014659957 | 0.014922352 | 0.023353538 | 0.029523794 | 0.03094226 | 0.024532834 | 0.02268 |

**Figure 8 – Monthly C:k ratios for proposed AM area, limited access vessels only, by month and fishing year**




Using landings data provided by NERO for all scallop trips in both open an access areas, and the observer data for all observed trips in both open an access areas, an estimate was developed of the total catch of yellowtail flounder by the scallop fishery in the SNE/MA yellowtail flounder stock area. These estimates were developed by FY, unlike the stock assessment which develops the estimates by calendar year. The estimates were calculated using monthly C:k ratios, quarterly ratios, and an annual ratio. There is variability in the estimates between the different calculation methods. No attempt was made to impute values for missing cells, which is part of the reason the monthly and quarterly estimates tend to be lower than the other estimates 2006.

**Table 24 – Estimates of total yellowtail flounder caught by the scallop fishery in the SNE/MA yellowtail flounder stock area, by fishing year (mt). Note that the average ratio value is computed using the average ratio in a month times the average landings in the same months, and is not the average of the annual values.**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | Average Ratio |
|---|---|---|---|---|---|---|
| Monthly | 62 | 52 | 121 | 104 | 75 | 87 |
| Qtrs | 79 | 62 | 107 | 105 | 75 | 88 |
| Half Years | 78 | 92 | 115 | 113 | 69 | 96 |
| Annual | 85 | 107 | 137 | 112 | 68 | 105 |

Using the observer and catch data for the proposed AM area, estimates were developed for the catch of yellowtail flounder by limited access vessels in that area. Estimates were calculated three different ways: using the monthly C:k ratios (without imputation for missing values), half year C:k ratios, and an annual C:k ratios.

**Table 25 – Estimates of total yellowtail flounder caught by limited access vessels in the proposed SNE/MA AM area. Note that the average ratio value is computed using the average ratio in a month times the average landings in the same months, and is not the average of the annual values.**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | Average Ratio |
|---|---|---|---|---|---|---|
| Monthly | 1 | 2 | 23 | 24 | 7 | 26 |
| Half-year | 4 | 3 | 26 | 23 | 13 | 25 |
| Annual | 1 | 17 | 30 | 17 | 13 | 21 |

The estimated catch by limited access vessels in the proposed AM area was compared to the estimated catch of yellowtail flounder by all scallop vessels in the stock area. Again, this was done without imputing catch ratios for missing year/month combinations. The table below shows the percent of the catch that was taken by limited access vessels in the proposed AM area. All three estimation methods give similar values for the percent of the catch taken in the AM area in FY 2007 and FY 2008 (15% - 23%). In FY 2009, the monthly approach gives a lower value but there were five months in FY 2009 with no observations. FY 2005 and FY 2006 also give lower estimates but each of these years has six months without any observations.

**Table 26 – Estimate of the percent of total SNE/MA yellowtail flounder catch taken by limited access vessels in the proposed SNE/MA AM area.**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | Average Ratio |
|---|---|---|---|---|---|---|
| Monthly | 2% | 4% | 19% | 23% | 9% | 30% |
| Half-year | 5% | 3% | 23% | 20% | 19% | 26% |
| Annual | 1% | 16% | 22% | 15% | 19% | 20% |

A simple imputation method inserts the average observation into the missing cells. In this case, the average monthly observation was inserted into the missing monthly cells. When this is done, the monthly estimates of yellowtail flounder catch increase in the AM area, and as a result the percent of the yellowtail flounder catch from that area in FY 2005, 2006, and 2009 is more similar to the other estimates. The exception is in FY 2006 where the imputed data results in much higher discard estimates than in the other years.

**Table 27 – Estimated catch of yellowtail flounder in the proposed AM area using imputed C;k ratios for missing observations**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | Average Ratio |
|---|---|---|---|---|---|---|
| Monthly (imputed) | 10 | 31 | 33 | 25 | 12 | 26 |
| Percent of total | 16% | 60% | 28% | 24% | 16% | 30% |

## Proposed AM Table

The proposed AM table (Table 28) uses the distribution of limited access landing of scallops in the AM area and the average yellowtail flounder catch from the area to create a graph that can be used to account for an overage. The cumulative landings distribution (Figure 7) in each month is multiplied by the average ratio from the annual C:k rate (20 percent) to get a curve that indicates the length of closure needed. This is consistent with the cumulative ratio used for in-season discard estimation and the annual method helps address the missing cell issue for months with no observed trips.   Based on this information, if the SNE/MA YT AM was triggered in Year 1, the proposed AM area could account for 20% of estimated YT catch in Year 2; that is the maximum

YT catch "savings" if the area was closed, assuming effort is displaced into areas with lower YT bycatch rates. If the overage from Year 1 is less than 20% the area can be closed shorter than a full fishing year. For example, if the sub-ACL is exceeded by 2% the area would only close in March, 5% would be March and April, and so on. Table 28 summarizes the length of time the AM area would be closed to the limited access fishery based on the amount of overage.

**Figure 9 - Initial estimate of YTF savings from closing SA 537/539/613 (the area for the SNE/MA YT AM).**

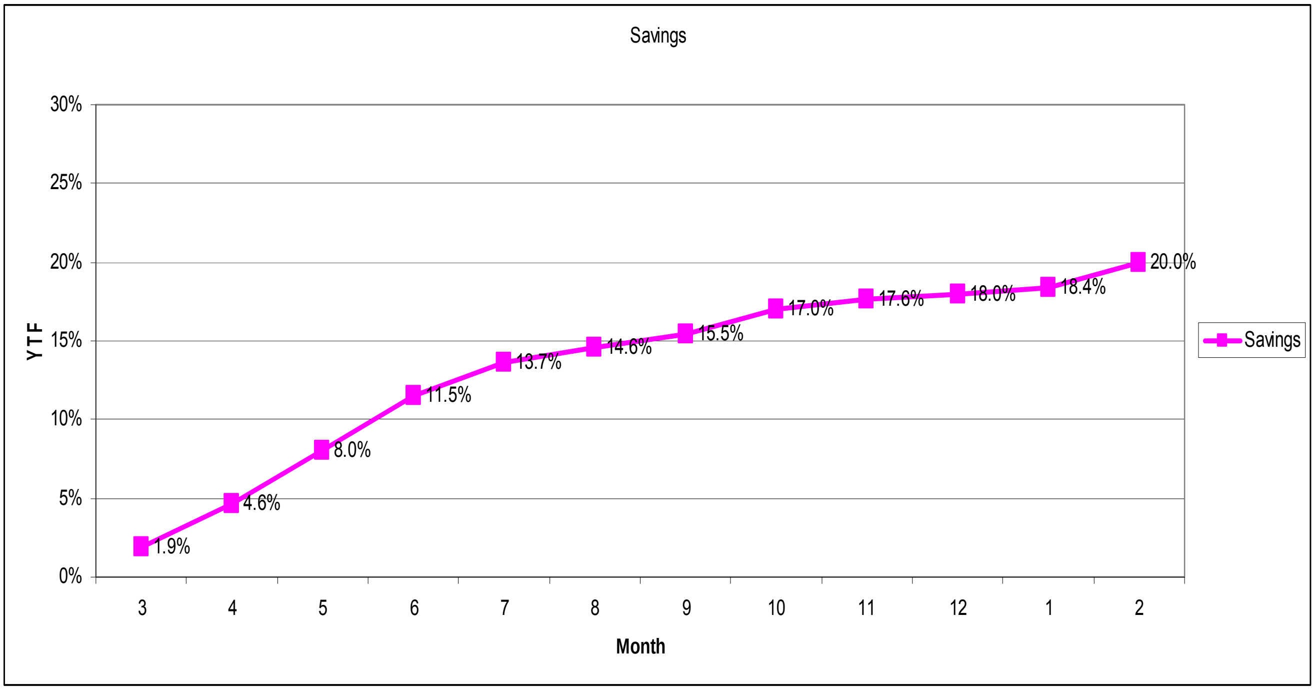



**Table 28 – Length of time for SNE/MA YT AM closure based on percent of overage**

| Percent of overage | Length of time area closed |
|---|---|
| 1%-2% | March |
| 3% - 5% | March and April |
| 6% to 8% | March through May |
| 9%-12% | March through June |
| 13%-14% | March through July |
| 15% | March through August |
| 16% | March through September |
| 17% | March through October |
| 18% | March through November |
| 19% | March through January |
| 20% and higher | March through February |

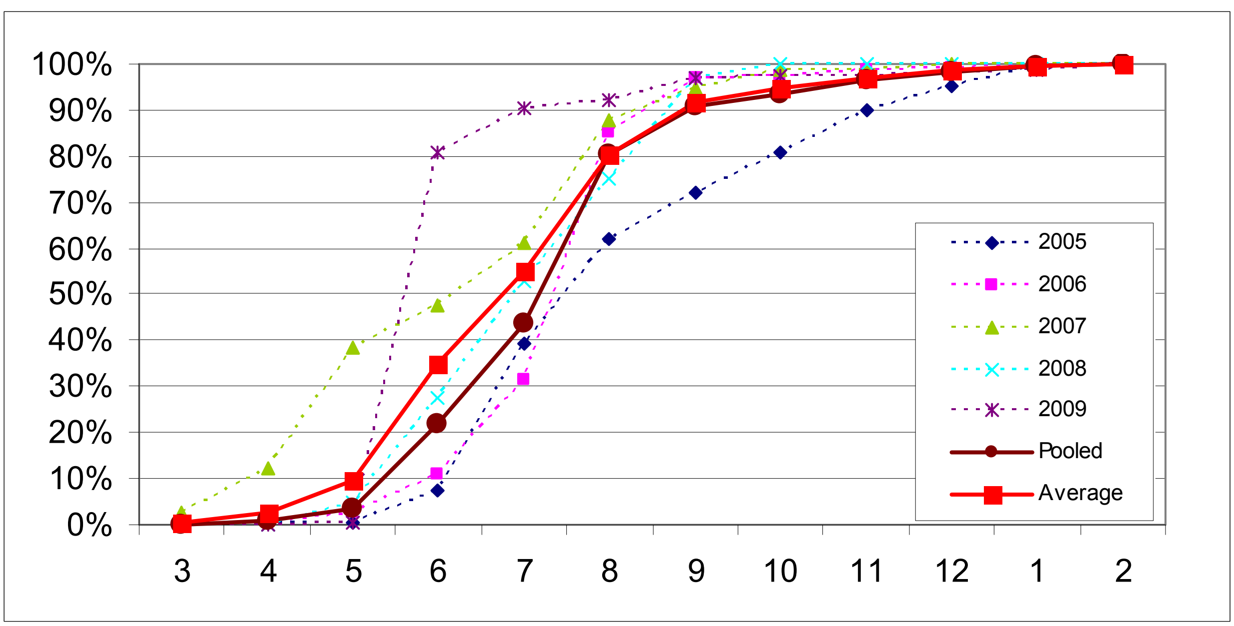
- ***GB YT AM***

Using data provided by NERO, the landings of scallops by limited access vessels were determined for statistical area 562 (the area for the GB YTF AM). They were summarized by fishing year. The data were not separated into landings from within the CAII access area and from outside the CAII access area. The amount of landings (pounds, meat weight) from SA 562 varies substantially depending on whether the CAII access area is open or not. In the three years the access area was open (2005, 2006, 2009), average scallop landings were 7 million pounds; in the two years the access area was not open the average was 600,000 pounds (Table 29). In spite of the differences in total landings, the distribution of landings is similar across all years. Between 60 to 90 percent of landings occur in the first six months of the scallop fishing year (Figure 10).

**Table 29 - Landings (scallop meat weights, lbs. by limited access scallop trips in SA 562 for FY 2005-2009.**

| MONTH | 2005 | 2006 | 2007 | 2008 | 2009 | Total | Average | Open Only Average | Closed Average |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 | 0 | 22,248 | 0 | 0 | 22,248 | 4,450 | 0 | 11,124 |
| 4 | 14,060 | 58,906 | 87,777 | 0 | 41 | 160,784 | 32,157 | 24,336 | 43,889 |
| 5 | 18,532 | 286,667 | 234,975 | 15,136 | 11,442 | 566,753 | 113,351 | 105,547 | 125,056 |
| 6 | 388,183 | 1,010,470 | 79,914 | 71,663 | 2,638,873 | 4,189,103 | 837,821 | 1,345,842 | 75,789 |
| 7 | 1,787,966 | 2,509,161 | 122,120 | 80,020 | 312,486 | 4,811,752 | 962,350 | 1,536,537 | 101,070 |
| 8 | 1,249,374 | 6,628,700 | 234,926 | 71,293 | 58,758 | 8,243,052 | 1,648,610 | 2,645,611 | 153,110 |
| 9 | 574,377 | 1,473,278 | 63,111 | 68,806 | 148,594 | 2,328,167 | 465,633 | 732,083 | 65,959 |
| 10 | 476,849 | 83,437 | 37,805 | 9,336 | 21,851 | 629,279 | 125,856 | 194,046 | 23,571 |
| 11 | 512,672 | 138,677 | 21 | 21 | 0 | 651,390 | 130,278 | 217,116 | 21 |
| 12 | 297,857 | 62,781 | 9,920 | 0 | 28,734 | 399,292 | 79,858 | 129,791 | 4,960 |
| 1 | 254,770 | 84,183 | 0 | 41 | 18,472 | 357,466 | 71,493 | 119,142 | 21 |
| 2 | 16,419 | 14,367 | 0 | 0 | 36,024 | 66,810 | 13,362 | 22,270 | 0 |
| Total | 5,591,060 | 12,350,628 | 892,818 | 316,316 | 3,275,274 | 22,426,097 | 4,485,219 | 7,072,321 | 604,567 |

**Figure 10 - Cumulative distribution of scallop landings by limited access vessels in SA 561 for FY 2005 – 2009.**



Observer data was queried to determine the ratio for the catch of yellowtail flounder to the kept scallop meat weights for limited access trips in GB yellowtail flounder stock area[2]. The data was also summarized for the ratios for the proposed GB AM area (SA 562). The ratios were calculated several different ways: individual by month, semi-annual (based on FY), and annual (based on FY). Rates are shown in the following tables and Figure 8 for the proposed AM area.

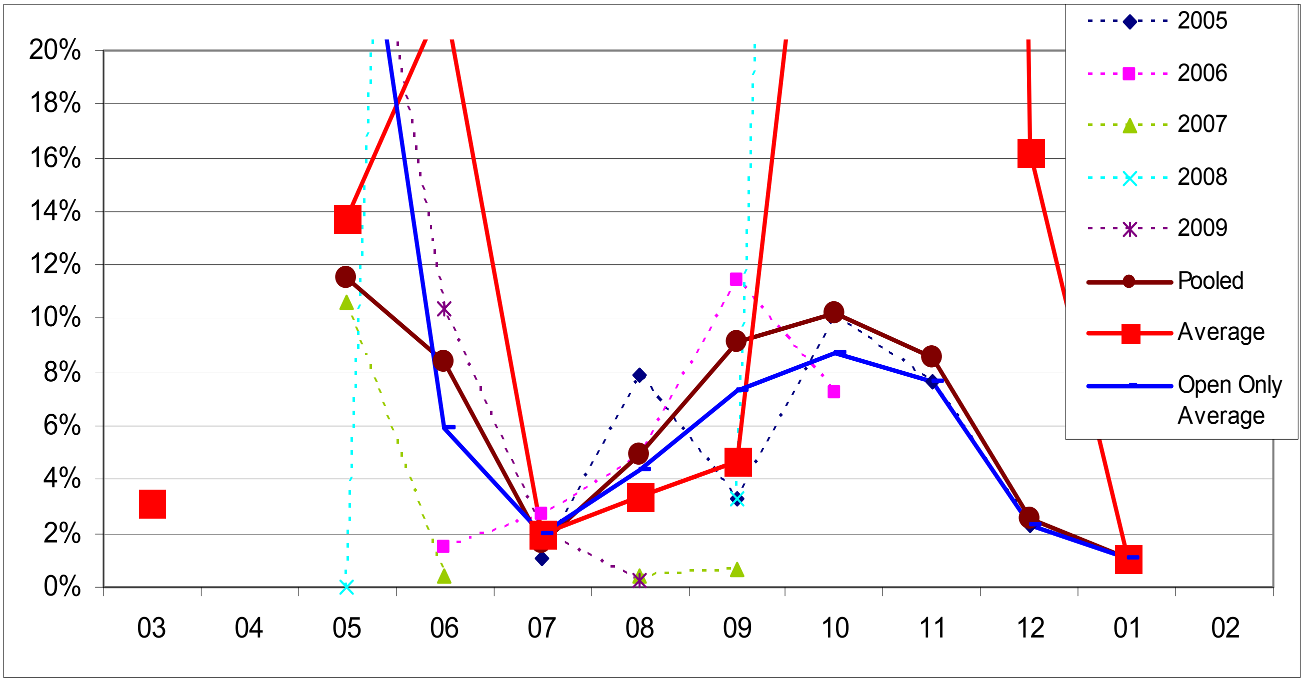
In the AM area there were many months without any observations on limited access trips. In addition, if the data is stratified for observed trips inside and outside the access area, the number of missing cells increases. In addition, in FY 2008 there were only seven observed trips in SA 562, and two of the observed trips had anomalous C:k ratios. In order to address these outlier trips, FY 2007 and 2008 data was pooled by month to create a combined C:k ratio. While this helped smooth the half-year and annual C:k ratios, it did not remove all the variability from the monthly ratios. The lack of observed trips in the first three months of the year, plus the differences between years the access area is open from when it is closed, make it difficult to determine initial trends in the monthly ratio, but it appears that ratios are relatively high in May and June, decline in mid-summer, before increasing in the fall (Figure 11).

**Table 30 – Catch of YTF:Kept scallops for observed limited access trips: ratios for each month; FY; SA 562**

| Month | 2005 | 2006 | 2007 | 2008 | 2009 | Pooled | Average | Open Only Average | 2007/2008 Pooled |
|---|---|---|---|---|---|---|---|---|---|
| 03 | | | 0.0314 | | | 0.031355 | 0.031355 | | 0.031355 |
| 04 | | | | | | | | | |
| 05 | | | 0.1065 | 0 | 0.305674 | 0.1151335 | 0.137379 | 0.305674012 | 0.099997 |
| 06 | | 0.0145025 | 0.0041 | 0.7568 | 0.103646 | 0.0842079 | 0.219758 | 0.059074331 | 0.171438 |
| 07 | 0.010849 | 0.0271226 | | | 0.020573 | 0.0166675 | 0.019515 | 0.019514897 | |
| 08 | 0.078907 | 0.0489262 | 0.0044 | | 0.002841 | 0.0493047 | 0.033775 | 0.043557858 | 0.004428 |
| 09 | 0.032825 | 0.1144009 | 0.0062 | 0.0327 | | 0.0910296 | 0.046537 | 0.073612778 | 0.011329 |
| 10 | 0.101461 | 0.0722344 | | 0.9117 | | 0.1023224 | 0.361807 | 0.086847579 | 0.911726 |
| 11 | 0.076637 | | | 5.0228 | | 0.085522 | 2.549723 | 0.076636701 | 5.022809 |
| 12 | 0.02319 | | 0.301 | | | 0.0255585 | 0.162086 | 0.023189927 | 0.300981 |
| 01 | 0.010344 | | | | | 0.0103443 | 0.010344 | 0.01034425 | |
| 02 | | | | | | | | | |
| Half 1 | 0.031483 | 0.0314826 | 0.0213 | 0.6139 | 0.101767 | 0.0577747 | 0.159987 | 0.054910658 | 0.051138 |
| Half 2 | 0.070018 | 0.1121939 | 0.0776 | 1.5947 | | 0.0789155 | 0.463636 | 0.09110598 | 0.536786 |
| Annual | 0.054504 | 0.0452687 | 0.0231 | 0.8209 | 0.101767 | 0.0622645 | 0.209111 | 0.067179791 | 0.071824 |

[2] Calculated as the sum of all YTF caught in a stratum/sum of all scallop meat weight landed in the same stratum.

**Figure 11 - Monthly C:k ratios for proposed AM area, limited access vessels only, by month and fishing year**




Using landings data provided by NERO for scallop trips in both open an access areas, and the observer data for all observed trips in both open an access areas, an estimate was developed of the total catch of yellowtail flounder by the scallop fishery in the GB yellowtail flounder stock area (Table 31). These estimates were developed by FY, unlike the stock assessment which develops the estimates by calendar year. The estimates were calculated using monthly C:k ratios, semi-annual ratios, and an annual ratio. There is variability in the estimates between the different calculation methods. No attempt was made to impute values for missing cells.

**Table 31 - Estimates of total yellowtail flounder caught by the scallop fishery in the SNE/MA yellowtail flounder stock area, by fishing year (lbs.). Note that the average ratio value is computed using the average ratio in a month times the average landings in the same months, and is not the average of the annual values.**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | Average |
|---|---|---|---|---|---|---|
| Monthly | 464,192 | 760,146 | 379,913 | 487,801 | 406,868 | 579,133 |
| Half Years | 504,364 | 944,272 | 328,300 | 457,484 | 464,489 | 566,399 |
| Annual | 521,270 | 954,833 | 364,809 | 457,116 | 516,530 | 605,272 |

Using the observer and catch data for the proposed AM area, estimates were developed for the catch of yellowtail flounder by limited access vessels in that area (Table 32). Estimates were calculated three different ways: using the monthly C:k ratios (without imputation for missing values), half year C:k ratios, and an annual C:k ratios. Two values were calculated for F Y2008. The first value uses the observer data from 2008 to determine the C:k ratios and multiplies by the 2008 scallop landings. The second value (labeled 2008(pool)) uses the C:k ratio calculated by pooling 2007 and 2008 observer data, and multiplies this ratio times the 2008 landings. The average estimate for SA 562 – calculated by multiplying the average C:k ratio in a stratum times the average landings in that stratum - is biased high by the anomalous 2008 observed trips.

**Table 32 - Estimates of total yellowtail flounder caught by limited access vessels in the proposed GB YTF AM area. Note that the average ratio value is computed using the average ratio in a month times the average landings in the same months, and is not the average of the annual values.**

| Temporal Strata | 2005 | 2006 | 2007 | 2008 | 2009 | 2008(pool) |
|---|---|---|---|---|---|---|
| Monthly | 234,048 | 581,598 | 30,458 | 65,100 | 283,602 | 23,510 |
| Half Year | 258,215 | 538,689 | 25,267 | 270,890 | 307,498 | 54,155 |
| Annual | 304,735 | 559,096 | 20,618 | 259,671 | 333,314 | 22,719 |

Because landings and discards from SA 562 differ substantially between years the access area is open compared to years it is closed, the decision was made to separately compare landings and discards for years the area was open or closed. Using the unweighted average annual ratio, 71 percent of discards are from SA 562 when the access area is open.

**Table 33 – Discards from GB YTF stock area. Note the average column is calculated from the average C:k ratios for FY 2005, 2006, and 2009, multiplied by the average landings; it is not the average of the three years.**

| | 2005 | 2006 | 2009 | Average |
|---|---|---|---|---|
| SA 522/525/561/562 | | | | |
| Monthly | 464,192 | 760,146 | 406,868 | 546,871 |
| Total Half Year | 504,364 | 944,272 | 464,489 | 604,900 |
| Annual | 521,270 | 954,833 | 516,530 | 669,833 |
| | | | | |
| SA 562 | | | | |
| Monthly | 234,048 | 581,598 | 283,602 | 348,615 |
| Total Half Year | 258,215 | 538,689 | 307,498 | 439,542 |
| Annual | 304,735 | 559,096 | 333,314 | 475,117 |
| | | | | |
| Percent from SA 562 | | | | |
| Monthly | 50% | 77% | 70% | 64% |
| Total Half Year | 51% | 57% | 66% | 73% |
| Annual | 58% | 59% | 65% | 71% |

YTF catch estimates for SA 562 in the years the access area was not open are shown in Table 34. Using the average annual method, 6 percent of discards from the GB YTF stock area are taken in SA 562 in years the access area is not open. The table shows that the catch estimates are more variable, probably as a result of the low observer coverage in FY 2008.

**Table 34 - Discards from GB YTF stock area. Note the average column is calculated from the average C:k ratios for FY 2007 and FY 2008, multiplied by the average landings; it is not the average of the three years.**

| | 2007 | 2008 | 2008 (pool) | Average (pool) |
|---|---|---|---|---|
| SA 522/525/561/562 | | | | |
| Monthly | 379,913 | 487,801 | 487,801 | 324,868 |
| Total Half Year | 328,300 | 457,484 | 457,484 | 459,518 |
| Annual | 364,809 | 457,116 | 457,116 | 472,822 |
| | | | | |
| SA 562 | | | | |
| Monthly | 30,458 | 65,100 | 23,510 | 44,252 |
| Total Half Year | 25,267 | 270,890 | 54,155 | 47,515 |
| Annual | 20,618 | 259,671 | 22,719 | 28,692 |
| | | | | |
| Percent from SA 562 | | | | |
| Monthly | 8% | 13% | 36% | 14% |
| Total Half Year | 8% | 59% | 20% | 10% |
| Annual | 6% | 57% | 9% | 6% |

### Proposed AM Table

The initial estimate of YTF savings from closing SA 562 is shown below for years the CAII access area is open(Figure 12) and years the access area is closed (Figure 13). These initial curves will be used to determine the length of the closure in the year after a sub-ACL is exceeded (Table 35 for when CAII is open and Table 36 for when it is closed). These curves may be adjusted in future actions as experience is gained with the proposed system. The start time of closures (March 1) may change in the future, as well closures during the year if there are times of year that have substantially lower bycatch rates such as the summer and fall.

The curve for the years the access area is closed (Figure 13) is particularly subject to change because of the limited observer data used to develop the curve. It should also be noted that in years that CAII is closed, this AM is not very effective in terms of accounting for YT overages in excess of 6%.

**Figure 12 – Initial estimate of YTF savings from closing SA 562 in years access area is open**

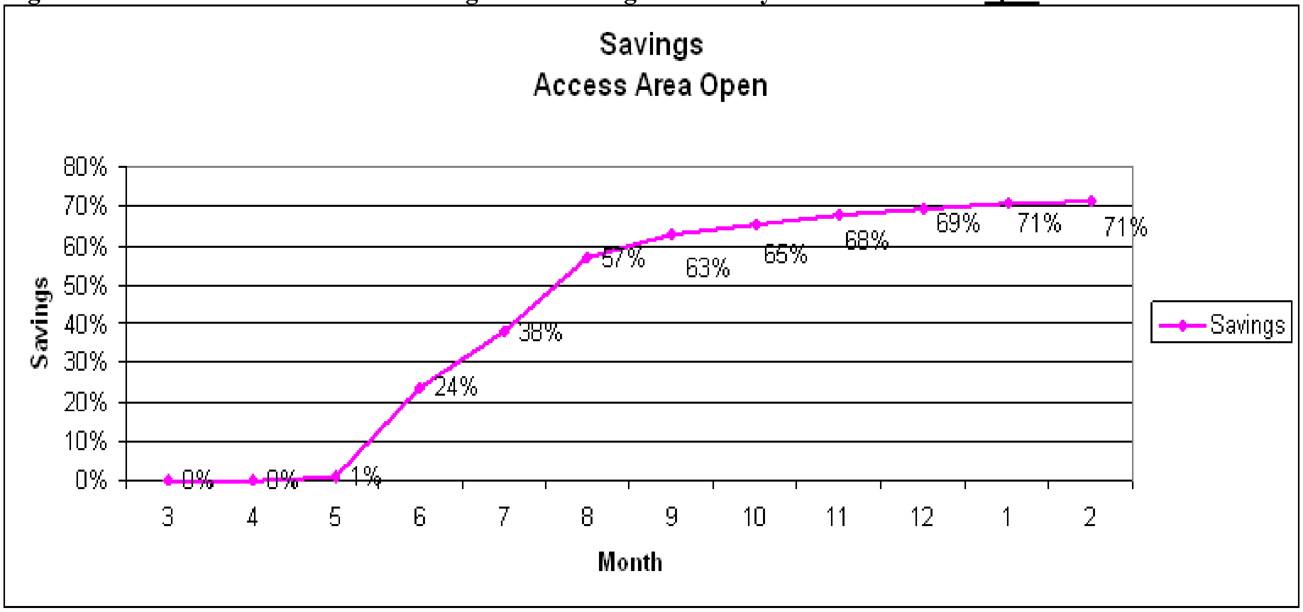



**Figure 13 – Initial estimate of YTF savings by closing SA 562 in years the access area is closed**

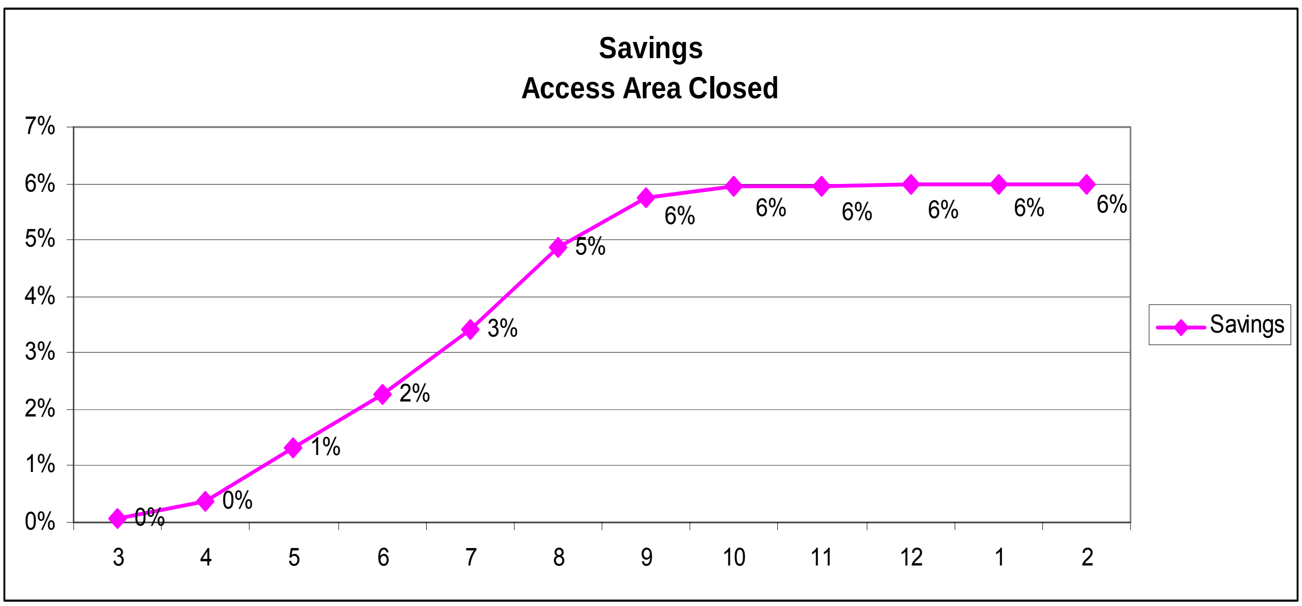


**Table 35 – Length of time for GB YT AM closure based on percent of overage when CAII is open**

| Percent of overage | Length of time area closed |
|---|---|
| 1% | March through May |
| 2% - 24% | March through June |
| 25% - 38% | March through July |
| 39% - 57% | March through August |
| 58% - 63% | March through September |
| 64% - 65% | March through October |
| 66% - 68% | March through November |
| 69% | March through December |
| 70 – 71% and over | March through February |

**Table 36 – Length of time for GB YT AM closure based on percent of overage when CAII is closed**

| Percent of overage | Length of time area closed |
|---|---|
| 1% | March through May |
| 2% | March through June |
| 3% | March through July |
| 4% - 5% | March through August |
| 6% and over | March through February |

### 3.2.3.11.2.1.2 In-season closure of entire YT stock area

This alternative would close an entire YT stock area to both LA and GC vessels when the YT sub-ACL has been reached. LAGC vessels would only be permitted to harvest their IFQ in other YT stock areas, and if the fleet had trips left in an access area, those trips would be moved to a different access area in a different YT stock area, if available. This AM would also require trip by trip declarations for monitoring purposes.

During the year, YT bycatch would be monitored by stock area, including projected catch in both open and access areas. When the agency projects that a sub-ACL has been exceeded, the scallop fishery will no longer be permitted to use open area DAS or IFQ in that stock area and any access area trips left in that stock area will have to be used in access areas in other YT stock areas (if any are available). The PDT will have to identify in advance what access areas would be available if trips have to be shifted and how many trips may be available in different areas.

### 3.2.3.11.2.1.3 Fleet-wide maximum of DAS and amount of IFQ that can be used in a stock area

This alternative would institute a fleet maximum DAS that can be used in a stock area for year three to account for an overage of the YTF sub-ACL in year one. The PDT would determine how much the fishery exceeded the YT sub-ACL, then that would be removed from the YT sub-ACL for year 3. An estimate would be made in terms of how many DAS would be expected to catch the total YT remaining, and a fleet max would be implemented for that stock area for year 3. Similarly, a fleet-wide maximum percentage of LAGC IFQ would be implemented for year 3. This AM would also require trip by trip declarations for monitoring purposes. Once NMFS determines that the fleetwide DAS limit has been reached the area would close to all limited access scallop vessels. Once NMFS determines that the general category scallop IFQ limit in a particular stock area has been reached, that entire stock area would close to all general category fishing.

In order to calculate the DAS limit, updated yellowtail bycatch data will be used to calculate the effort estimated that equates to the new year 3 sub-ACL. For example, if the new yellowtail sub-ACL minus the overage was 60,000 pounds, and the bycatch estimate was three pounds of yellowtail for every 100 pounds of scallops caught, we would expect the ACL to be reached at 2 million pounds of scallops. Using an example LPUE value of 1,700 lbs/day, this scallop poundage equates to 1,176 DAS. Therefore for this example, the fleet would be limited to 1,176 DAS in a particular YT stock area, and once those DAS are used the area would close to all scallop fishing for the remainder of the fishing year.

**Table 37 – Example of how fleetwide and individual DAS/quota YT AMs would work**

| | YT sub-ACL | Actual catch |
|---|---|---|
| Year 1 | 70,000 | 80,000 |
| Year 2 | 70,000 | 70,000 |
| Year 3 | 70,000 | 60,000 |
| Total | 21,000 | 21,000 |

**AM in Year 3**

60,000

LA 56,700 ← → GC 3,300

| | | | |
|---|---|---|---|
| 1,890,000 | Total scallop | 110,000 | Total scallop |
| 1,700 | LPUE | 362 | # gen cat permits |
| 1,112 | DAS limit | 303.9 | By individual permit |
| 327 | # vessels | | |
| 3.40 | Individual DAS | | |

### 3.2.3.11.2.1.4 Individual maximum of DAS and amount of IFQ that can be used in a stock area

This alternative would institute an individual maximum number of DAS that can be used in a stock area for year three to account for an overage of the YTF sub-ACL in year one. The PDT would determine how much the fishery exceeded the YT sub-ACL, then that would be removed from the YT sub-ACL for year 3. An estimate would be made in terms of how many DAS would be expected to catch the total YT remaining and an individual maximum number of DAS would be instituted per vessel for that stock area for year 3. Similarly, an individual maximum percent (or poundage) of IFQ that can be used in that stock area will be instituted in year 3. This AM would also require trip by trip declarations for monitoring purposes.

In order to calculate the DAS limit, updated yellowtail bycatch data will be used to calculate the effort estimated that equates to the new year 3 sub-ACL. For example, if the new yellowtail sub-ACL minus the overage was 60,000 pounds, and the bycatch estimate was three pounds of yellowtail for every 100 pounds of scallops caught, we would expect the ACL to be reached at 2 million pounds of scallops. Using an example LPUE value of 1700 lbs/day, this scallop poundage equates to 1176 DAS. This number would then be divided by the number of LA vessels in the fleet (i.e. 340) to determine the DAS limit in that stock area per vessel (in this example, 3.5 DAS). See the example above. Specifically, under the same conditions about, a 60,000 pound limit on YT catch in Year 3, each limited access vessel would be limited to 3.4 DAS in that stock area, and each general category vessel would be limited to 303.9 pounds.

Since these would be on an individual basis the Council may want to consider allowing vessels to trade area-specific DAS to reduce distributional impacts. This will have to be developed in much more detail if the Council selects this alternative. Currently DAS are not area specific and if trading of DAS is included as an AM the Council will have to specify if all DAS are area specific etc.

### 3.2.3.11.2.1.5 "Reachback" YT AM for 2010 only

The AMs considered in the previous sections for YT will go into effect when A15 is implemented, but it should be noted that AMs are already in place for the groundfish fishery if the yellowtail flounder ACL is exceeded in 2010. Framework 44 to the NE Multispecies FMP implemented ACLs for 2010, 2011, and 2012. The scallop fishery was allocated 100% of the amount of YT catch that was projected to be needed in the scallop fishery as bycatch in 2010, and 90% of the projected amount needed for 2011 and 2012. Accountability measures for the groundfish fishery were also implemented, but because the YT allocation to the scallop fishery is treated as a sub-component, and not an ACL, no AMs were required under the Scallop FMP. Therefore, if there is an overage of the total YT ACL in 2010 the only AMs in place are for groundfish fishery. When the Council discussed this at the November 2009 Council meeting it passed a motion that Amendment 15 should consider an AM that would hold the scallop fishery accountable if the overage of the total YT ACL for a YT stock in 2010 was caused by the scallop fishery exceeding their sub-component allocation. This idea was called a "reachback" provision that would address potential overages from the 2010 fishing year.

The Council passed the motion below, but since this Council motion was made after Amendment 15 draft was adopted by the Council, no specific measures were included in Amendment. Before final action on Amendment 15 the Scallop Committee and Council did develop an alternative to address the Council's motion.

> Council Motion: "That the Council initiate an action to adjust the rebuilding strategy for Georges Bank yellowtail flounder. Also, that **the Council consider including in Amendment 15 measures to allow an adjustment in 2011 for any overages in the yellowtail flounder subcomponent in 2010 if the overall annual catch limit for yellowtail flounder is exceeded in 2010.**
>
> The motion, as amended, **carried** on a show of hands (11/6/0)."

The Scallop Committee discussed this Council motion at their meeting on September 7, 2010. It was discussed that whatever AM alternative is ultimately proposed for future YT overages should also apply for any overage in 2010. The Council discussed this idea at the November 2010 Council meeting and agreed. Therefore, if the scallop fishery exceeds their sub-component allocation in 2010, and that causes the entire YT ACL to be exceeded (groundfish fisheries stay below their sub-ACLs) the scallop fishery will be subject to the YT AM selected as the proposed action, Alternative 3.2.3.11.2.1.1. Specifically, if by March 1, 2011 the Regional Administrator determines that either the GB or YT sub-ACL for the scallop fishery will be exceeded, the statistical areas specified in Amendment 15 will be closed to scallop fishing upon implementation of Amendment 15, since it will not be implemented before March 1, 2011. (The March 1 date applies only for fishing year 2011, because of the overlap with A15 and to allow use of most up-to-date data. All future determinations will be made by January 15 of each year.) Depending on the amount of the overage, and when Amendment 15 is implemented it is possible that the length of time the area is closed for will not equate to the severity of the overage since bycatch rates are typically higher in the first half of the fishing year. However, there is nothing that can be done about this issue for the first year since Amendment 15 will not be effective at the start of the year. It should be noted that as of October 15, 2010 the scallop fishery is well below the sub-ACL in GB (18%), and below the sub-ACL in SNE/MA (about 70% harvested with 4.5 months left in the fishing year). Similar to the YT AM approved in Alternative 3.2.3.11.2.1.1, this reachback AM would not apply to the general category fishery in exempted areas.

After approval of Amendment 15 an updated estimate of projected YT catch by the scallop fishery was prepared by the Fishery Statistics Office, NMFS. As of October 15, 2010, the scallop fishery has caught about 18% of the GB YT sub-ACL and 70% of the SNE/MA YT sub-ACL. While there are 4.5 months left in the fishing year, the PDT does not expect the fishery to exceed either sub-ACL since fishing levels are generally lower in the latter months of the fishing year (November – February).

Scallop catch from dealer data (as of October 15, 2010) were combined with VTR data (as of September 24, 2010) to get location of scallop catch by stock area. That was used to calculate a bycatch rate of scallops to yellowtail flounder using 2010 observer data in Nantucket Lightship access area, and 2009 bycatch rate data was used for GB and open areas in SNE/MA because 2010 observer data are not available for those areas yet. When these data are combined the estimates of YT catch are 58,568 pounds for GB and 208,766 pounds for SNE/MA. About 31,818 pounds of YT were estimated from access area trips in NL, and that TAC was 101,547 pounds, so 31% of the total TAC for that access area was caught since almost all trips have been taken. Since bycatch rates were lower in NL than they have been in the past, that provides more YT bycatch for the overall fishery in open areas within the SNE/MA YT stock area. This will hopefully help prevent the scallop fishery from exceeding the overall SNE/MA YT sub-ACL of 297,624 pounds, or 135 mt. As of October 15, 2010 the combined YT catch in NL and open areas within the SNE/MA stock area equals 208,766 pounds, or 70% of the total TAC.

**Administrative process for setting ACLs in the Scallop FMP**

This section describes the administrative process for setting ACLs for Atlantic sea scallops. The ACL process will become an element of the existing periodic adjustment process. The Scallop FMP is on a biennial adjustment process and management measures are generally set two years at a time. Biennially, the PDT evaluates whether management measures need to be revised in order to meet mortality objectives. The PDT should submit suggested measures to the Council by September 1 or later in November if using updated resource surveys conducted that summer. Because complete data is not available at the end of each fishing year, AMs may not be in place at the start of a specific fishing year. If not the Agency will notify vessels after the fishing year starts what the final measures are for that year, as adjusted by any necessary AMs.

During this same process, the PDT will develop recommendations for Acceptable Biological Catch (ABC) for the scallop stock based on mortality objectives ($F_{max}$, $F_{threshold}$, $F_{target}$). These recommendations form the basis for setting ACLs. The PDT recommendations will include the following elements:

- OFL estimate for the next two fishing years. While it is expected that the OFL will be determined every two years, the PDT will recommend it for three years in case there is a delay in implementation of a subsequent action.
- ABC recommendation for the length of time the action is in place. The PDT recommendation should report the catch that results from the ABC control rule recommended by the SSC (See Section 3.2.3.7.3). The PDT will present updated ABC recommendations to the SSC before final approval by the Council. The PDT may recommend a change to the ABC control rule or ultimate buffer between OFL and ABC, but it must be approved by the SSC. If a change in the distance of the buffer is recommended, the recommendation should include an explicit discussion of the scientific uncertainties that are taken into account in developing the recommendation. In order to evaluate these uncertainties, the PDT will develop an informal document that describes the issues that will be considered. This information will be provided for the consideration of the SSC and the Council. It is not intended to be binding on either body. The ABC control rule and the buffer between OFL and ABC can be modified by framework action or in a specification process; they do not need to be considered in a full Amendment process. While it is expected that ABCs will be determined every two years, the PDT will recommend them for three years in case of a delay in implementation of a subsequent action.
- An evaluation of whether the ABCs have been exceeded in earlier years.
- As part of the biennial adjustment process, the PDT should evaluate whether rebuilding is needed and adjust as necessary to account for exceeding the OFL, should that occur. In that instance, $F_{rebuild}$ will be used instead of $F_{target}$.

The PDT will also develop a recommendation to the Council for setting ACLs. This action proposes that ACL = ABC, but the PDT can recommend an ACL lower than ABC if it is sufficiently justified. The overall ACL will be broken into two sub-ACLs, one each for the LA and LAGC fisheries. The PDT will then re-evaluate management uncertainty for each fishery and recommend ACTs for each sub-ACL. In terms of setting ACTs, in this action the Council included a zero percent buffer for management uncertainty for the LAGC fishery and a buffer based on the fishing mortality equivalent to a 25% chance of exceeding ABC for the LA fishery. If a change in the distance of the buffer is recommended, the recommendation should include an explicit discussion of the management uncertainties that are taken into account in developing the recommendation. In order to evaluate these uncertainties, the PDT will develop an informal document that describes the issues that will be considered. The buffer between sub-ACL and ACT can be modified by framework or in the specification process; it does not need to be considered in a full Amendment process. The Council may ask the SSC to comment on the PDT recommendations on ACLs and ACTs, but that is not required. Should the SSC recommend an ACL or ACT that differs from that originally recommended by the PDT, the PDT will revise its recommendations if necessary. The PDT's analyses related to ACLs will include:

- A summary indicating whether ACLs have been exceeded in recent years. For the first action implementing ACLs, a summary of whether the allocations were exceeded for the prior 2 years will be included, but will not reference the term "ACL."
- A recommendation for setting ACLs for the next two years. The PDT will describe the uncertainties and risks considered when developing these recommendations. While it is expected that ACLs will be determined every two years, the PDT will recommend them for three years in case of a delay in implementation of a subsequent action.

The PDT recommendations for setting ABC will be provided to the SSC prior to the September Council meeting (or November Council meeting if the fishing year is changed). Guided by terms of reference prepared by the Council, the SSC will review the PDT recommendations and will either approve those recommendations or will provide alternative recommendations. In either case, the SSC will explicitly describe the elements of scientific uncertainty that were considered in developing its recommendation. If the SSC recommends an ABC that differs from the PDT recommendation, the PDT will revise its recommendations using the new ABCs. If requested by the Council, the SSC may comment on the uncertainty and risk that should be considered by the Council when setting ACLs and ACTs and whether the PDT has identified those elements sufficiently for Council consideration.

The Council will consider the ABC recommendations of the SSC and the ACL/ACT recommendations of the PDT and will make a decision on those recommendations prior to the November Council meeting. If the Council questions the SSC recommendation, it can ask for a more detailed explanation from the SSC, but the Council must establish an ACL that is equal to or lower than the ABC recommended by the SSC. When setting ACLs, the Council will consider the advice of the SSC and the PDT and will provide the rationale used for setting the ACLs.

Once the Council has approved ACLs, they will be submitted to NMFS prior to November 1 if the action is expected to be implemented before March 1, or soon thereafter if the Council uses updated survey information causing the action to be implemented after the start of the fishing year. ACLs can be implemented in several ways. If the Council is submitting a management action as part of the periodic adjustment process, the ACLs can be included in that document. Alternatively, the ACLs can be submitted as part of a specification package supported by the appropriate NEPA document. It should be noted that in many instances, ACLs merely reflect the catch associated with the mortality targets determined by the management plan and therefore the impacts are consistent with those evaluated when the mortality targets were adopted. For this reason, in those instances that an ACL is not revised, it is anticipated that there will not be a need for a new supporting NEPA document.

After receipt of the Council decision for ACLs – either as part of a new management action or as part of a specification package – NMFS will review the Council's decision and, if consistent with applicable law, will implement the ACL consistent with the Administrative Procedures Act (APA).

**Monitoring ACLs**

Current monitoring techniques already used in the sea scallop fishery will be used to monitor scallop ACLs. These include daily monitoring of catch in the access areas and yearly estimates of catch in the open areas. This could also include the quarterly monitoring that is currently ongoing in the general category fishery while they convert to the limited access general category IFQ fishery.

Monitoring the YT sub-ACLs are expected to necessitate new monitoring requirements. After the Council identified their recommendation for a specific YT AM, the Council included the detailed monitoring requirements that would be needed in order to facilitate that particular AM. Since the Council adopted a YT AM that includes a seasonal closure in a subsequent fishing year several additional reporting requirements will be necessary. Specifically, VMS will be expanded so that limited access vessels can report yellowtail flounder catch and all other species landed by stock area on a daily basis.

If approved as the Council recommended, vessels will now have to report: yellowtail flounder catch (kept and discarded), scallop kept, and all other species landed. These values are necessary to calculate area specific bycatch rates that will be used to monitor the YT sub-ACLs. These additional reporting requirements provide the information needed to complete the "cumulative kept-all" monitoring methodology adopted by the Center, and peer-reviewed.

**Timing of ACL monitoring and triggering AMs**

Once this action is implemented, if an ACL (LA sub-ACL, LAGC sub-ACL, or the YT sub-ACLs allocated to the scallop fishery) is exceeded AMs are triggered. The question is when they will be triggered. Due to time lags in monitoring of some aspects of the ACL program and scheduling of Council meetings it may not be feasible that AMs are effective right at the start of a subsequent fishing year.

For example, Framework 22 is expected to implement ACLs for both 2011 and 2012. Fishing year 2011 will run from March 1, 2011 through February 28, 2012, unless the fishing year is changed and then it will run from May 1, 2011 through April 30, 2012. Final catch data for fishing year 2011 is not available until about June 1, 2012. At that time the PDT can determine if either the LA sub-ACL and/or LAGC sub-ACL have been exceeded. Leaving some time for PDT review and analysis, the PDT could notify the Council and NMFS by August 1 if AMs should be triggered. If that is the case, then the 2012 fishing year will begin on March 1 (or May 1 if changed in this action), and DAS may need to be reduced later in the fishing year, after August. For example, if the number of open area DAS need to be reduced to account for an overage in the LA sub-ACL in 2011, vessels will be notified sometime after the start of the 2012 fishing year how many DAS they will ultimately be allocated for that year.

If the Council does not want to reduce DAS during the fishing year, another option could be that AMs are triggered not in the subsequent year, but two years out. So if an ACL is exceeded in 2011, AMs would be effective in 2013. By adopting subsequent year AMs for both scallop and yellowtail, Year 3 AMs are not relevant.

## 3.3 MEASURES TO ADDRESS EXCESS CAPACITY IN THE LIMITED ACCESS SCALLOP FISHERY AND PROVIDE MORE FLEXIBILITY FOR EFFICIENT UTILIZATION OF THE RESOURCE

There is currently excess capacity in the limited access scallop fishery; that is, the capacity of individual vessels and the fleet as a whole is greater than what is needed to harvest sustainable levels of catch. Since the limited access program was implemented in 1994, the number of DAS has reduced steadily. Due to effort reductions in Amendment 4 (1994) and Amendment 7 (1999), DAS allocations were reduced almost by half from 204 DAS in 1994 to 120 DAS in 1999. Since 1999 more effort has been allocated to access areas rather than open areas, so the number of open area DAS allocated has continued to decline. Currently, open area DAS allocations are closer to 40 DAS and five access area trips for a full-time vessel. For an average full-time vessel, that represents about 80 DAS per year – about 40 in open areas and 40 in access areas.

Some members of the industry have approached the Council explaining that this level of effort is insufficient to maintain vessels and crew throughout the year with increasing costs. Some crews routinely work on multiple vessels in one fishing year. The Council has heard that some ports are congested with vessels tied to the dock for the majority of the year causing safety and space issues. While this fishery remains profitable, concerns have been raised about the continued ability to remain profitable while operating inefficiently: wasting fuel, electricity, maintenance expenses. Therefore, the Council is considering a range of options to reduce excess capacity in the limited access fishery and thereby increase the efficiency of the fishery overall, improve safety, and reduce costs of the limited access harvest of scallops.

At the September 2009 Council meeting the Council approved the range of alternatives and analyses developed for Amendment 15. At that meeting they also identified several preferred alternatives. For the objective to address excess capacity in the LA scallop fishery and provide more flexibility for efficient utilization of the resource, the Council identified both the permit stacking and leasing alternatives compared to No Action for this section. There are various alternatives and options within the overall stacking and leasing alternatives as well. The Council did not identify preferred alternatives for the overall preferred permit stacking and leasing alternatives. The only other alternative related to this objective that was identified as preferred when the Council approved the DEIS was the application of a fishing power and mortality adjustment for stacking and leasing DAS (Alternative 3.3.2.2.1 and 3.3.3.1.1). While these measures were identified as preferred before the DEIS went out to public hearing, they were not part of the final proposed action. The council decided to recommend No Action to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource.

### 3.3.1 No Action (PROPOSED ACTION)

If this alternative is selected, then no additional measures would be implemented to reduce capacity in the limited access scallop fishery. All current restrictions would remain in place.

**Rationale**: This alternative would be selected if the Council determines that there is no need to reduce capacity in the limited access scallop fishery and/or the alternatives presented are not deemed the appropriate means of addressing excess capacity at this time. The Council determined that current permit restrictions, gear and crew restrictions, vessel upgrade restrictions, possession limits and other effort controls are sufficient to control capacity of this fleet and the potential negative impacts of the other measures considered outweigh the potential benefits.

### 3.3.2 Permit Stacking

This group of alternatives would allow a single limited access vessel to have more than one limited access scallop permit. During early development of this action, there was an alternative to allow stacking of more than two permits, but that was rejected from consideration (See Section3.6.5.5). Therefore, these stacking alternatives are limited to stacking of two permits only. There are various options below including specific adjustments that would be applied if a vessel decides to stack permits in order to keep fishing effort conservation neutral. There are also specifics related to the status of stacked permits and limits on activity of that vessel in terms of participation in other fisheries. Permit application requirements for stacking are not described here, but will need to be resolved in the final action.

This alternative is not applicable to limited access general category permits, only full-time, part-time and occasional limited access scallop permits (scallop permit categories 2 through 9).

#### 3.3.2.1 Restrict stacking to two permits only

This alternative would allow a limited access scallop vessel to have up to two limited access permits. Specifically, the vessel would be permitted to fish the allocations for both permits. Both permits could be of unlike permit categories and unlike vessel baselines in terms of horsepower and size.

The purchase of a permit would be permanent – no leasing would be permitted unless leasing is also permitted by this action (Section 3.6.5.7). One individual who currently owns two permits on two separate vessels would be permitted to stack those two permits on one vessel. This action may place additional restrictions on stacking in terms of fishing power adjustments and other provisions – See Sections 3.3.2.2 and 3.3.2.4.

**Rationale**: This alternative could reduce the size of the scallop fleet by allowing a limited level of permit stacking. Idled vessels could be sold or scrapped and future investments could be put into one vessel instead of two. It has been argued that limited stacking would prevent excessive consolidation in the fishery, compared to unrestricted permit stacking.

Most limited access vessels also have other limited access permits with baseline restrictions. A query of the NMFS permit database in 2009 showed that 340 of 346 limited access scallop permits also have other limited access permits. This may include some vessels that only have additional limited access permits that don't' have baseline restrictions (i.e. lobster, LAGC, tilefish, and NE multispecies Handgear A permits) but it is very likely that most of these 340 vessels also have permits with other baseline restrictions. According to vessel replacement criteria for these other permits, if a scallop vessel was replaced by (or stacked onto) a different scallop vessel that was larger than the baseline restrictions of its other limited access permits, that vessel would have to permanently relinquish its other permits in the stacking process.

#### 3.3.2.2 Fishing power adjustment for stacking permits

In order to address the concern that stacking could move effort from less powerful or lower-performing vessels to more powerful or higher-performing vessels, potentially increasing capacity and fishing mortality, the Council is considering alternatives for adjusting stacked permits. It is possible for the Council to select one or more of these stacking options.

##### 3.3.2.2.1 Permits can be stacked provided there is a fishing power adjustment

A fishing power adjustment would be applied regardless of whether the two permits being stacked are compatible based upon current replacement criteria. The PDT has developed a production model that incorporates a variety of vessel characteristics to estimate fishing power per vessel based on historical data. An adjustment would be made to the "stacked" permit only if the fishing power of that second permit is higher than the original permit. The adjustment will be set so that landings will not increase as a result of stacking. Adjustments are only made down – (i.e. if a smaller permit is being placed on a larger vessel that does not meet the replacement criteria, the fishing allocation of DAS is adjusted down. If a larger permit is being placed on a smaller vessel, the smaller vessel does not get additional DAS). The fishing power adjustment is for DAS only and would not adjust access area trips since that activity is controlled by output controls (possession limit). So if a full-time permit was stacked with an occasional permit, that vessel would be permitted to take multiple access area trips, but would be bound to the possession limit associated with each trip.

**The Committee approved inclusion of two adjustments: a "fishing power adjustment" that would be applied based on the HP and length class of each vessel involved in stacking, and a second "mortality adjustment" that would be applied to all transactions. The range for the second adjustment is 5%-11%.** The value for the second adjustment can be modified by framework to an amount outside the initial percentage considered. In addition, if input controls are adjusted in future actions the fishing power adjustment factors (both adjustments) should be reconsidered and possibly adjusted.

**Rationale**: This alternative is designed to keep the program at least conservation neutral or even reduce overall capacity by adjusting the DAS of a stacked permit if it is being moved to a vessel with higher fishing capability. Whether permits are within the same vessel replacement criteria or not, a fishing power adjustment would be applied to ensure that capacity does not increase as a result of stacking permits.

**Details of fishing power adjustment**

The fishing power adjustment (FPA) would be applied based on what horsepower/length group each vessel involved in the stack/lease is in (~0-30% adjustment for dredge vessels). In order to derive a formula for adjusting DAS transfers for the difference in the vessel fishing power, an annual open area production model was estimated using different functional forms and variables including horsepower, gross tonnage, length, crew size, DAS-used, dredge size, time trend, a proxy for open area biomass, and variables separating the impacts of small dredge and scallop trawl vessels. The goal was to derive a relatively simple functional form with variables that could be measured reliably and couldn't be changed easily. For example, as some scallop industry members indicated, gross tonnage of a vessel could be altered relatively easily compared to changing the length of the vessel. Similarly, it would be relatively easy to change number of crew (up to the crew limit) or the dredge size. Consistent with these concerns, a production model is used to estimate annul scallop landings per vessel as a function of DAS-used, proxy for biomass, horsepower, length and two additional variables that indicate whether the vessel is a small dredge or a scallop trawl. The details of the model are described in Section

The full-time time dredge vessels are grouped into 13 groups by their HP and length (Table 39). This grouping allows many vessels with similar characteristics and adjustment factors to be placed in the same group. In terms of HP, 8 groups are constructed starting with 500 HP and with including vessels up to 20% higher HP in the same group using the vessel replacement criteria for HP. The length grouping identifies small vessels with 50 to 70 feet and large vessels with more than 70 feet.

Table 39 shows the adjustment factors for this group of vessels for fishing power, i.e., for HP and length. Although, larger length groups could be subdivided into more subgroups, the examination of Table 39 shows that the incremental difference in the adjustment factors for HP and length is already quite small between these 13 groups, and having more groups would possibly have a marginal influence on the adjustment values. The same adjustment factors are relevant for DAS transfers full-time, part-time and occasional dredge vessels, between small scallop dredges or between scallop trawls. If DAS transfers take place between a regular and a small dredge or between a dredge and a trawl, however, the adjustment coefficients would be lower than shown in Table 39.

**Table 38. Full-time Dredge Vessel Characteristics**

| HP | Length | HP-Length Group | Number of vessels | HP | GRT | Length |
|---|---|---|---|---|---|---|
| <500 | 50-70 | 11 | 5 | 392 | 59 | 61 |
| <500 | >70 | 12 | 9 | 431 | 122 | 77 |
| 500-599 | 50-70 | 21 | 5 | 523 | 79 | 64 |
| 500-599 | >70 | 22 | 25 | 530 | 132 | 77 |
| 600-719 | 50-70 | 31 | 4 | 618 | 99 | 66 |
| 600-719 | >70 | 32 | 37 | 641 | 146 | 81 |
| 720-863 | 50-70 | 41 | 4 | 763 | 119 | 65 |
| 720-863 | >70 | 42 | 74 | 814 | 166 | 83 |
| 864-1036 | 50-70 | 51 | 1 | 950 | 111 | 64 |
| 864-1036 | >70 | 52 | 30 | 959 | 167 | 86 |
| 1037-1243 | >70 | 62 | 38 | 1,121 | 183 | 89 |
| 1244-1492 | >70 | 72 | 12 | 1,299 | 178 | 90 |
| >=1493 | >70 | 82 | 11 | 1,545 | 186 | 99 |

**Table 39. Adjustment factors for fishing year 2007 (Based on group means for HP and length for 255 full-time dredge vessels)**

| HP | Length | HP-Len Group | adj11 | adj12 | adj21 | adj22 | adj31 | adj32 | adj41 | adj42 | adj51 | Adj52 | Adj62 | Adj72 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <500 | 50-70 | 11 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| <500 | >70 | 12 | 0.958 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 500-599 | 50-70 | 21 | 0.936 | 0.977 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 500-599 | >70 | 22 | 0.917 | 0.957 | 0.980 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 600-719 | 50-70 | 31 | 0.903 | 0.942 | 0.965 | 0.985 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 600-719 | >70 | 32 | 0.876 | 0.914 | 0.936 | 0.955 | 0.970 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 720-863 | 50-70 | 41 | 0.862 | 0.900 | 0.921 | 0.940 | 0.955 | 0.984 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 720-863 | >70 | 42 | 0.831 | 0.867 | 0.888 | 0.906 | 0.920 | 0.948 | 0.964 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 864-1036 | 50-70 | 51 | 0.825 | 0.861 | 0.882 | 0.900 | 0.914 | 0.942 | 0.957 | 0.993 | 1.000 | 1.000 | 1.000 | 1.000 |
| 864-1036 | >70 | 52 | 0.800 | 0.835 | 0.855 | 0.873 | 0.886 | 0.914 | 0.928 | 0.963 | 0.970 | 1.000 | 1.000 | 1.000 |
| 1037-1243 | >70 | 62 | 0.771 | 0.805 | 0.824 | 0.841 | 0.854 | 0.881 | 0.895 | 0.928 | 0.935 | 0.964 | 1.000 | 1.000 |
| 1244-1492 | >70 | 72 | 0.747 | 0.780 | 0.798 | 0.815 | 0.827 | 0.853 | 0.866 | 0.899 | 0.905 | 0.933 | 0.969 | 1.000 |
| >= 1493 | >70 | 82 | 0.714 | 0.745 | 0.763 | 0.779 | 0.791 | 0.815 | 0.828 | 0.859 | 0.865 | 0.892 | 0.926 | 0.956 |

**Table 40 – Adjustment factors for fishing year 2007 for stacking between trawl and dredge vessels (in 2007 there were 11 trawl vessels in the three HP/length classes in dealer records)**

| HP | Length | Acquiring Fulltime HP-Length Group | Scallop Trawl : HP-Length Group DAS leased/stacked from | | |
|---|---|---|---|---|---|
| | | | 12 | 22 | 32 |
| <500 | 50-70 | 11 | 0.955 | 0.989 | 1 |
| <500 | >70 | 12 | 0.915 | 0.947 | 0.983 |
| 500-599 | 50-70 | 21 | 0.894 | 0.925 | 0.960 |
| 500-599 | >70 | 22 | 0.876 | 0.907 | 0.941 |
| 600-719 | 50-70 | 31 | 0.862 | 0.893 | 0.926 |
| 600-719 | >70 | 32 | 0.837 | 0.866 | 0.899 |
| 720-863 | 50-70 | 41 | 0.824 | 0.853 | 0.885 |
| 720-863 | >70 | 42 | 0.794 | 0.822 | 0.852 |
| 864-1036 | 50-70 | 51 | 0.788 | 0.816 | 0.846 |
| 864-1036 | >70 | 52 | 0.764 | 0.791 | 0.821 |
| 1037-1243 | >70 | 62 | 0.737 | 0.763 | 0.791 |
| 1244-1492 | >70 | 72 | 0.714 | 0.739 | 0.766 |
| >=1493 | >70 | 82 | 0.682 | 0.706 | 0.733 |

**Table 41 - Adjustment factors for fishing year 2007 for stacking between small dredge and large dredge vessels (in 2007 there were 63 small dredge permits, 57 were FT small dredge in dealer records)**

| HP | Length | Acquiring HP-Length Group | Full-time Small Dredge: HP-Length Group DAS leased/stacked from | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 11 | 12 | 21 | 22 | 32 | 42 | 72 |
| <500 | 50-70 | 11 | 0.627 | 0.650 | 0.671 | 0.690 | 0.716 | 0.76 | 0.850 |
| <500 | >70 | 12 | 0.601 | 0.623 | 0.643 | 0.661 | 0.686 | 0.73 | 0.815 |
| 500-599 | 50-70 | 21 | 0.587 | 0.608 | 0.628 | 0.646 | 0.670 | 0.71 | 0.796 |
| 500-599 | >70 | 22 | 0.575 | 0.596 | 0.615 | 0.632 | 0.657 | 0.70 | 0.780 |
| 600-719 | 50-70 | 31 | 0.566 | 0.587 | 0.606 | 0.623 | 0.647 | 0.68 | 0.768 |
| 600-719 | >70 | 32 | 0.549 | 0.569 | 0.588 | 0.604 | 0.627 | 0.66 | 0.745 |
| 720-863 | 50-70 | 41 | 0.541 | 0.560 | 0.578 | 0.595 | 0.618 | 0.65 | 0.733 |
| 720-863 | >70 | 42 | 0.521 | 0.540 | 0.557 | 0.573 | 0.595 | 0.63 | 0.707 |
| 864-1036 | 50-70 | 51 | 0.517 | 0.536 | 0.553 | 0.569 | 0.591 | 0.63 | 0.702 |
| 864-1036 | >70 | 52 | 0.502 | 0.520 | 0.537 | 0.552 | 0.573 | 0.61 | 0.681 |
| 1037-1243 | >70 | 62 | 0.484 | 0.501 | 0.517 | 0.532 | 0.552 | 0.58 | 0.656 |
| 1244-1492 | >70 | 72 | 0.468 | 0.486 | 0.501 | 0.515 | 0.535 | 0.57 | 0.635 |
| >=1493 | >70 | 82 | 0.448 | 0.464 | 0.479 | 0.493 | 0.511 | 0.54 | 0.607 |

### *Details of mortality adjustment*

In addition to the adjustment described above that would account for differences in fishing power based on various horsepower and length characteristics, the PDT also recommends an additional "mortality" adjustment. Based on the production model estimates, on the impact of vessel's age on efficiency, and on factors that *are not taken into account* in the model but are expected to increase LPUE when effort is stacked/leased, the PDT also recommended that an additional overall adjustment of 9% (Overall DAS or Mortality Adjustment) should be applied to the number of *days that are transferred*. This adjustment would be applied to all transactions regardless of HP and length class and would only apply to the permit or DAS that are transferred. The initial permit (and the DAS associated with the first permit) would not be affected by this adjustment. The final PDT recommendation is a range of 7-11% for this adjustment because that includes the standard error around the 9% point estimate. **The Committee expanded this range to 5%-11%.**

The PDT recommends that a second adjustment be applied to all stack/DAS lease transactions to recognize that LPUE increases when DAS increase, and there are other factors that influence LPUE that cannot be included in the production model – e.g. the skill of the captain and the crew, the age of the vessel, reduction gear ratio, size and shape of kort nozzle, etc.

The simulation results based on the production model coefficients indicated that the LPUE (landings per days-absent) is estimated to increase by about 5% if open area days-at-sea used is doubled as result of stacking or leasing. For example, consider a vessel that had an open area LPUE of 2000 lb. per days absent while fishing with 42 open area days-at-sea. The model results suggested that if this vessel doubles it open area days from 42 to 84 days through leasing/stacking, its LPUE could increase to 2100 per day-at-sea, increasing the total catch by 5%. Therefore, in order to keep the total catch constant, total days should be reduced by 5% from 84 days to approximately 80 days. To be consistent with the fishing power adjustment which is applied only to the transferred days, the same result could be obtained by reducing the transferred days, that is, 42 days-at-sea by about double of 5%. The reason why the adjustment is less than 10% (5%*2) has to do with the decline in LPUE as the number of transferred days is reduced (as a result of the adjustment). Taking this into account, the simulation model indicated that the transferred days-at-sea, i.e., 42 days, should be reduced approximately by about 9%, by about 4 days, to 38 days, in order to keep the fishing mortality constant.

The PDT discussed if the adjustment should be higher than 9% to account for factors that are not accounted for in the production model discussed below, but instead decided that there are also situations that could constrain a vessel with more DAS that would potentially reduce LPUE. Ultimately, the PDT was most comfortable with a range of 7-11% for this mortality adjustment because that is based on the best available science including the variance from the model output (standard deviation of 2% in either direction). It was also discussed that this adjustment could be re-evaluated after Amendment 15 to determine if 9% was the appropriate value to use and if not could be adjusted by framework.

The additional reasons why LPUE might increase as a result of permit stacking or DAS leasing as listed below.

1. If vessels are permitted to fish more DAS on one vessel the model suggests that average catch per DAS will increase for that vessel because it will have more flexibility in determining trip length.
2. LPUE is expected to increase by some degree due to other aspects of the vessel that influence fishing power that are not measured thus cannot be modeled (reduction gear ratio, use of kort nozzle, etc.).
3. LPUE is also expected to increase because it is assumed that DAS will transfer to the boat with more experienced and skillful crew and captain. If more DAS are fished by more efficient crew, more catch is expected.
4. The newer vessels have a higher LPUE and stacking permits on these boats (even when they are smaller in size) would increase fishing mortality if no overall DAS adjustment is applied.
5. LPUE is could change because of changes in fishing patterns. For example, a multi-vessel owner that sends both of its vessels to the most productive areas at the same time will not be able to do that after stacking/leasing. If this reduces the number of vessels that fish in that area per-unit of time, the overall LPUE would also decline at a slower rate than before.
6. On the other hand, a vessel owner could send two boats at the same time to fish in a very productive area, but with stacking it will not be able to do that. If this pushes the fishing date to seasons when the meat-weight is lower, than, LPUE could decline because of stacking. The overall result would depend whether the increase in LPUE because of the spreading out effort outweighs the negative impact on LPUE because the fishing takes place when meat-weigh is lower. If three fourths of the boats share the same crew as was indicated by many boat owners, this means the vessels owned by multi boat owners usually do not fish at the same time most of the year. If this is the case, there might not be significant impacts on LPUE from changing the fishing patterns. In other situations, if an access area is closed because of YT TAC, or measures for turtles restrict fishing during certain seasons, the owners who stacked permits on single boats may have less flexibility relative to the ones that didn't. For example, multi-boat owners could send two of their vessels to fish at the same time before the areas are closed before Yellowtail TAC is

reached, whereas the owners who stacked permits on one boat will not be able to do that and avoid closure.

#### 3.3.2.2.2 Permits can only be stacked which meet replacement criteria

Permits could be stacked with no power adjustment if the baseline specifications of the permits involved meet the current vessel replacement criteria.

**Rationale:** Current replacement criteria of 20/10/10/10 (HP/GT/NT/LOA) were designed to prevent vessel replacements from increasing fishing capability; therefore if stacking were limited to vessels within the same specifications then the risk of increasing fishing capability is reduced. This alternative is being considered if the Council does not want to consider a fishing power adjustment.

#### 3.3.2.2.3 Permits in same replacement criteria have no adjustment applied and permits from different categories would be subject to fishing power adjustment

No adjustment would be applied if vessels are from the same upgrade restriction category, and if vessels are from different categories the same power adjustment described in Section 3.3.2.2.1 would be applied to stacked permit, if the permit is from a higher upgrade category.

#### 3.3.2.2.4 Restriction on stacking for trawl permits

If a trawl permit converts to a dredge vessel (through annual declaration) and stacks with another dredge permit it would not be permitted to convert back to a trawl permit and fish both permits with trawl gear. Once a trawl permit stacks with a dredge permit, it can't go back to being a trawl permit.

### 3.3.2.3 DAS carryover provision for a vessel with stacked permits

#### 3.3.2.3.1 No Action

Regardless if a vessel has a stacked permit or not, the maximum unused DAS each vessel can carry forward to the next fishing year is 10 DAS.

#### 3.3.2.3.2 Increase carry over provision for vessels with stacked permits

If a vessel has two permits stacked on it, the vessel may carry forward up to 20 unused DAS from one fishing year to the next.

### 3.3.2.4 Status of stacked permits

At the September 2008 Committee meeting it was clarified that this alternative would restrict a vessel so that stacking a second permit could only occur once. A vessel could not stack two permits one year and then stack a third permit in the future. A vessel could only participate in stacking once. Only two permits can be stacked at any one time per vessel. If vessel A stacks permit B (2$^{nd}$ permit) one year, that vessel cannot stack permit C (3$^{rd}$ permit) the following year. If de-stacking is also permitted, vessel A can de-stack permits A and B; vessel A would then be permitted to subsequently stack a different permit (A and C, for example). It was further clarified that all permits (all species) from vessel B would need to be stacked with vessel A.

The Committee included two options for de-stacking and the Council agreed to include both for consideration:

Option 1: Allow de-stacking

Option 2: Prohibit de-stacking

It is understood that even with stacking permits will keep their identity. In addition, individual permits will count toward the 5% ownership restriction. One vessel with two permits would count as two permits in terms of the ownership maximum.

There are still remaining issues that need to be clarified related to consideration of de-stacking:

1) It is not clear yet if there will be additional restrictions on permits that are de-stacked. At meetings that took place after Amendment 15 alternatives were approved it was discussed that additional constraints could be placed on permits that de-stack in order to prevent capacity from increasing in the future. For example, the Council could consider restrictions that would only allow permits to be de-stacked only if the freed up permit was put onto an active scallop vessel already in the fishery.
2) According to the permit renewal restrictions at CFR 648.4(a)(1)(i)(B), if a vessel is issued more than one LA or moratorium permit, these permits will be regarded as a permit suite that cannot be split once joined unless permits are permanently relinquished. How would this work with de-stacking and baseline restrictions?
3) Catch histories from dealer reports are obtained at the vessel level, not the permit level, so tracking catch histories and then apportioning them fairly after de-stacking would be challenging. Provisions may need to be included for how this would be handled.

#### 3.3.2.5 Restrictions on vessel upgrades for vessels that participate in stacking

This section considers three alternatives for possible restrictions on vessels that stack permits and later consider upgrading their vessel. Scallop vessels are currently permitted to upgrade their vessel within the 10/10/20 constraints or beyond those constraints only once.

Option A: Any upgrades on vessels that stack be subject to the 10/10/20 rule;

Option B: Once a vessel decides to stack upgrades prohibited;

Option C: Any upgrade on vessels that stack be subject to same fishing power adjustment selected for permit stacking

### 3.3.3 Leasing

This group of alternatives would allow a limited access scallop vessel to lease fishing effort from another limited access permit. There is one option for DAS leasing and one for leasing of access area trips. There are various options being considered in terms of who can lease and other restrictions. There are also several alternatives for fishing power adjustments that would be applied to leased open area DAS in order to prevent increases in fishing capability. In addition, there are several alternatives designed to prevent increased fishing effort in other directed fisheries as a result of leasing. These leasing alternatives were designed to increase flexibility among limited access scallop vessels without increasing fishing effort in other directed fisheries that scallop vessels participate in. It was clarified that if there is a violation related to leased effort, the lessee is responsible for the violation/fine, not the lessor.

This alternative is not applicable to limited access general category permits, only full-time, part-time and occasional limited access scallop permits (scallop permit categories 2 through 9).

#### 3.3.3.1 Leasing of open area DAS

This alternative would allow a vessel to lease part or all of its open area DAS allocation on an annual basis. DAS would have to be leased in full day units, no leasing of partial DAS. Vessels would be permitted to lease DAS to one or more vessels. A vessel issues a valid LA scallop permit may transfer all its open area DAS for an undefined amount of time (annual or longer; more than one year but not indefinitely) to another vessel with a valid LA scallop permit in accordance with the conditions and restrictions described under this section. The RA has final approval authority for all DAS and access area transfer requests.

**Rationale**: This alternative provides an option for an individual to lease access. Compared to leasing of a full permit, this option is more flexible because it allows smaller units of access to be leased compared to a full permit. Some individuals may only want to lease some access in order to make a full year, i.e. 20 DAS compared to a full DAS allocation and access area trips. This option may accommodate more individuals as business plans change during the year and/or equipment fails. Additionally, it would allow greater negotiating opportunities compared to leasing a full permit.

##### 3.3.3.1.1 Fishing power adjustment for leasing open area DAS

In order to address the concern that leasing could move effort from less powerful or lower-performing vessels to more powerful or higher-performing vessels, thus potentially increasing capacity and fishing mortality, the Council is considering an alternative for adjusting leased open area DAS. If leasing of DAS is approved and this alternative is selected, a fishing power adjustment would be applied if a vessel is leasing from another vessel with lower fishing power. Three options are under consideration:

- Option A: All leasing of DAS would be subject to a fishing power adjustment similar to the one being considered for the stacking alternative that is based on a production model developed by the PDT that factors in various vessel characteristics (based on individual basis or group basis).
- Option B: No adjustment would be applied, but vessels would be limited to lease DAS from other vessels in the same vessel replacement criteria baseline. Vessels from different vessel upgrade criteria would not be allowed to lease from each other.
- Option C: No adjustment would be applied if vessels in the same upgrade restriction category, and if vessels are from different categories the same power adjustment from Option A would be applied to leased DAS if vessels from different categories.

##### 3.3.3.1.2 DAS and landings history

History of leased DAS use and landings will be considered in two alternatives:
1) Lessor will maintain DAS usage history and catch from leased effort would accrue to Lessee, or
2) DAS usage and catch history is applied to the Lessor.

As in the Groundfish FMP, for the purposes of accounting for leased DAS used, leased DAS will be accounted for (subtracted from available DAS) prior to allocated DAS. In the case of multiple leases to one vessel, history of leased DAS use will be presumed to remain with the Lessor in the order in which such leases were approved by NMFS.

Due to constraints on the ability to apply landings to vessels (i.e. it is generally assumed that the vessel that lands the fish retains that history), the second option would be very difficult to monitor. For example, if a vessel fishes a trip that involves both leased-in DAS and the vessel's allocated DAS, the dealer-reported catch for that trip would not distinguish between which DAS were being used. Separating out the values later in the RO database may necessitate a judgment call as to splitting between leased and owned DAS.

#### 3.3.3.2 Leasing of access area trips

This alternative would allow a vessel to lease one or more access area trips on an annual basis. Portions of access area trips could not be leased, the entire trip and associated possession limit for that trip would have to be leased as one unit. Leasing of access area trips could occur between permit types and gear types with certain restrictions. Vessels would be permitted to lease trips to one or more vessels. A vessel would not be permitted to combine access area trips. This alternative would not need a fishing power adjustment clause because access area trips are managed with a possession limit. An output control is used to limit the total harvest per trip.

**Rationale**: This alternative provides an option for an individual to lease access area trips. Compared to leasing of a full permit, this option is more flexible because it allows smaller units of access to be leased compared to a full permit. Some individuals may only want to lease some access in order to make a full year, i.e. 2 access area trips compared to access for an entire limited access permit (DAS and access area trips). This option may be more realistic for a larger group of individuals because leasing some access is less expensive than having to lease an entire scallop permit.

#### 3.3.3.3 Maximum DAS and access area trips that can be leased

The Lessee may lease open area DAS and access area trips up to twice the amount of allocation. Carryover DAS from the previous year are not included.

#### 3.3.3.4 Ownership cap provisions

If leasing is approved, the current ownership cap of 5% of limited access permits should be amended and the following two options should be considered:

1. Any individual that owns the maximum number of permits allowed may not lease in additional scallop DAS or access area trips; however, any person or entity may lease within the vessels that he/she owns and would be subject to all other leasing provisions
2. Notwithstanding (1) above, permit ownership and leasing of scallop DAS and access area trips shall be limited to no more than 5% of the permits or 5% of the allocation of scallop DAS and access area trips or poundage (including leased DAS and/or access area trips).

#### 3.3.3.5 Leasing restrictions options

There are two alternatives for restrictions on leasing based on permit categories:

1. Restrict leasing to same permit category only; or
2. Leasing will be allowed between different permit categories for access area trips only. If possession limits are different, the lessee would be limited to the possession limit of the lessor AND leasing of open area DAS between different permit categories would be prohibited

#### 3.3.3.6 Application Requirements

An application to lease must contain the following information: Lessor's owner name, vessel name, permit number and official number or state registration number; Lessee's owner name, vessel name, permit number and official number or state registration number; number of open area DAS to be leased; total price paid for leased DAS; signatures of Lessor and Lessee; and date the form was completed. The application should include the total number of access area trips to be leased. All of this information will be maintained consistent with confidentiality requirements according to applicable Federal law. Aggregate data may be used in DAS leasing analyses. Unless application is denied, the Lessee and Lessor will receive a confirmation of application approval from the RA within 45 days of receipt of application.

The RA may deny the application for the following reasons, including but not limited to: incomplete application, application submitted less than 60 days prior to the end of the fishing year, Lessor or Lessee does not have a valid LA scallop permit or is otherwise not eligible, the Lessor's or Lessee's DAS or LA scallop permit are under sanction pursuant to an enforcement proceeding, the Lessor's or Lessee's vessel is prohibited from fishing, the Lessor's or Lessee's vessel is not in compliance with conditions, restrictions, and requirements of this part, or the Lessor has an insufficient number of allocated or unused DAS available to lease. The RA will send a letter to the applicants describing the reason(s) for application rejection and the decision is final. Permit application requirements for leasing will need to be resolved in the final action.

#### 3.3.3.7 Leasing from vessels in CPH

Unlike the Multispecies leasing program, the Council is considering the allowance of leasing scallop DAS and access area trips from vessels in confirmation of permit history (CPH). Two options are being considered: 1) allow leasing from vessels in CPH, 2) prohibit leasing from vessels in CPH.

#### 3.3.3.8 Sub-leasing

Additionally, the Committee discussed whether to allow sub-leasing. They agreed that sub-leasing and re-leasing of DAS and access area trips would be allowed with the same restrictions applied to original leases. Leased DAS and access area trips may not be carried over into the subsequent fishing year by the Lessor or Lessee.

#### 3.3.3.9 Other Provisions for vessels that lease DAS and/or access area trips

This alternative includes a variety of other provisions under consideration for leasing DAS and/or access area trips.

- The application to lease DAS and/or access area trips must be submitted to the Regional Office at least 45 days before the date on which the applicants desire to have the leased DAS or trips effective, and no less than 60 days prior to the end of the fishing year.
- DAS or trips may only be leased once during the fishing year. The Committee's intent is that the lease will last for one year, i.e. has an expiration date, which is the last day of the fishing year.
- Additionally, leasing can be between scallop permitted vessels only.
- If stacking is adopted in this amendment, leasing would be prohibited for vessels with stacked permits.

## 3.4 MEASURES TO ADJUST SPECIFIC ASPECTS OF FMP TO MAKE OVERALL PROGRAM MORE EFFECTIVE

This section contains alternatives for various measures that are already in place. The topics include adjustments to the overfishing definition, modifications to the limited access general category program, revision of the EFH closed areas if Phase II to the Habitat Omnibus Amendment is delayed, improvements to the research set-aside program, and changing the fishing year.

### 3.4.1 Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation

National Standard 1 (NS1) of the Magnuson-Stevens Reauthorization Act of 2007 (MSRA) requires that "*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.*" Overfishing and overfished are defined by the MSRA as "*a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.*" Optimum yield is defined as the amount of fish that will provide the greatest overall benefit to the nation and is based on the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor.

When the MSA was reauthorized in 1996, the Council convened an Overfishing Definition Review Panel that reviewed existing overfishing definitions in the Northeast. The panel concluded that seven components are needed in an overfishing definition to meet the requirements of the reauthorized MSA and National Standard guidelines: status determination, maximum fishing mortality threshold, biomass target, specification of maximum sustainable and optimum yield, maximum rebuilding time period specification, and a control law or fishery mortality management strategy. The panel found the scallop fishery's current overfishing definition to be consistent with new requirements of the MSA and National Standard 1 guidelines.

While the scallop fishery's OFD is consistent with MSA and NS1 requirements and has been effective at keeping the scallop fishery above the overfished level and preventing overfishing overall, the current overfishing definition and overfishing reference points are based on the assumption that fishing mortality (F) is spatially uniform. But, in the scallop fishery this assumption is inaccurate because of unfished biomass in closed areas, variable Fs in access areas, and spatially variable fishing mortality in open areas that potentially leads to growth overfishing in these areas. Under the current OFD, closed and access areas protect the scallop stock from recruitment overfishing, but growth overfishing may occur in the open areas because the current OFD averages spatially across open and closed areas, i.e. F is higher in open areas to compensate for the zero fishing mortality in closed areas. The greater the fraction of scallops in the closed areas, the more ineffective the current OFD becomes because it is based on a spatially–averaged fishing mortality rate. Additionally, when more biomass is within closed areas, the estimated whole-stock F may be more sensitive to recruitment and measurement error than to changes in effort.

Recently, the Council maintained a reduced target *F* of 0.20 (70% of the old threshold of 0.29) to compensate for this highly non-uniform fishing effort and help mitigate localized depletion of the scallop resource in the open areas (Framework 19, NEFSC, 2007). For this reason, similar to the PDT recommendation for Amendment 10, this action includes an alternative that would alter the OFD to be more spatially-explicit, i.e. allow different target Fs for the open areas and access areas that vary within themselves over time. The PDT previously recommended altering the OFD during the development of Amendment 10 so that it better addressed area rotation and protected against loss of yield due to excessive open area fishing. The proposed OFD in A10 used a time-averaging approach for specific areas, such as the open areas and specific access areas, providing the ability to obtain yields that are higher than a constant $F_{msy}$ (or $F_{max}$, the proxy for $F_{msy}$ in the scallop fishery prior to this action) allows, while maintaining flexibility and consistency in catch and other environmental factors that may require some areas to be closed (i.e., EFH and finfish discard concerns). The SSC reviewed the modified overfishing definition proposed in Amendment 10 and agreed with the PDT that the stock would not be protected from growth overfishing under the current OFD due to excessive fishing mortality rates in open areas. They also recognized that permanently closed areas offer a way to keep the total biomass above minimum biomass thresholds but potentially restrict fishing opportunities. Overall the SSC recommended that the modified overfishing definition "provides an appropriate scheme for addressing area rotation and protects against the loss of yield due to excessive fishing in open areas. It allows management flexibility both in terms of which areas are opened and the time frame over which the stock is utilized."

Although the proposed OFD was not adopted in Amendment 10, the FEIS for Amendment 10 and the scallop regulations at § 648.55 included a provision that allows the PDT to recommend more conservative management measures if the PDT determined such measures would be necessary to achieve optimum yield. Amendment 10 included the following (**emphasis added**):

> *5.1.9 Framework Adjustment Process*
> *…In order to assure that optimum yield is achieved, on a continuing basis, the PDT will develop, and modify as appropriate, the suite of management measures required to achieve optimum yield-per recruit from the exploitable components of the resource (e.g. those components available for harvest in the upcoming fishing years), taking into account at least the following factors:*
>
> - ***Differential fishing mortality rates for the various spatial components of the resource***
> - ***Overall yields from the portions of the scallop resource available to the fishery***
> - *Outlook for phasing in and out closed and controlled access areas according to the area rotation strategy*
> - *Potential adverse impacts on EFH.*

Herein, the PDT has developed two alternative OFDs. The modified overfishing definitions achieve a time-averaged fishing mortality target between $F = 0.23$ and 0.26 under the previous threshold of 0.29, and around 0.28 in all areas not in long term closures under the recently approved threshold of 0.38 from SAW50. The status quo and proposed definitions differ in how the fishing mortality rate is determined and judged against the fishing mortality reference points, and also in their flexibility. The modified approaches are designed to maximize yield from scallops that are or will be available to the fishery. Although the biomass level includes scallops that occur in long-term area closures, the fishing mortality rate is calculated from the proportion of exploitable scallops removed from areas available to the fishery. The fishing mortality target is set as a percent of the threshold to lessen the risk of overfishing. Prior to Framework 18, that target was set at 80% of the threshold; however, it has been set lower than that in Frameworks 18 and 19 due to concerns about localized overfishing in the open areas. In Framework 19, the target was set at $F = 0.20$, although the threshold was 0.29 (80% $F_{threshold} = 0.23$).

The modified overfishing definition does include a principle that when a percentage of the total scallop biomass is within long-term closed areas, the fishing mortality target should increase from 80% of the threshold to something higher. Lastly, the modified definitions allow more flexibility for setting annual fishing mortality targets to meet area rotation objectives compared to the rigid overall target defined in the current overfishing definition.

Amendment 10 explained that in the near term (2004-2008), the current overfishing definition would produce higher landings and DAS allocations, but over the long-term, landings would be reduced. Amendment 10 explained that the A10-modified definition had favorable characteristics like reducing potential impacts on bycatch and habitat by reducing area swept, increasing catch by 10% with larger average scallop size, and in the long-term, producing higher stock biomass. The proposed hybrid OFD encounters the same short-term issues and provides the same long-term benefits. Ultimately the Council recommended to maintain the current overfishing definition but tried to achieve some of the favorable effects of the modified definition by requiring the use of 4" minimum size rings and by increasing the DAS tradeoff for controlled access areas. Additionally, some concern was voiced about the modified OFD being implemented along-side area rotation – some wanted to ensure area rotation was an effective strategy before making additional modifications to the fishery. Now that area rotation has been proven to be an effective strategy, the OFD could be altered to make it better adhere to area rotation policies.

The SSC, in October 2008, reconsidered a slightly revised OFD being developed in this amendment that accounts for spatial and temporal heterogeneity in fishing mortality rates to determine if any modifications or alternatives should be considered. Based on a technical review of the revised OFD, the SSC developed the following consensus statements:

1. The analyses supporting the proposed overfishing definition are scientifically sound and should be considered in Scallop Amendment 15.

2. The spatially adjusted $F_{max}$ calculation used in this alternative is more realistic than the conventional $F_{max}$ calculation because it is more compatible with the current area management strategy. For example, there may be an instance under the current overfishing definition in which the overall resource may not be experiencing overfishing, but given the spatial distribution of scallops and the fishery, individual management areas may be experiencing growth overfishing (i.e., producing less than maximum yield-per-recruit), resulting in foregone potential yield.

3. Although $F_{max}$ may be a reasonable proxy for $F_{MSY}$, the SSC recommends more explicit consideration of long-term sustainable yield, rather than maximizing yield-per-recruit. For example, aspects of long-term sustainable yield include: non-equilibrium conditions, stock-recruit relationship, conservation of spawning potential, density dependence, and environmental influences; all of which should be monitored as a condition of managing the fishery based on $F_{max}$. Yield-per-recruit is sensitive to changes in the spatial patterns of fishing and the age/size distribution of the catch. Alternatively, an overfishing definition based on spawning-biomass-per-recruit associated with high resource productivity would be

less sensitive to changes in the nature of the fishery and would allow flexibility to manage for a variety of management objectives (e.g., optimum yield, economic and social utilities).

Following the SSC meeting in October 2008, the PDT worked on a "hybrid" alternative, combining aspects of the alternative proposed in A10 and the existing overfishing definition. The A10 proposed overfishing definition would be difficult to assess since the area used to calculate fishing mortality would change year to year as areas open and close. On the other hand, the greatest difficulty with the status quo OFD is that the fishing mortality target is set in an *ad hoc* manner. In the hybrid alternative, the threshold would be kept as in the status quo OFD (currently, a spatially averaged $F$ of 0.38, previously 0.29), whereas the target would be set using the proposed overfishing definition with the additional restriction that the spatially averaged fishing mortality shall be no higher than 80% of the threshold. Under the hybrid definition, the targets for the open and access areas would be set at the level appropriate for each area (e.g., setting open area fishing mortality at the maximum of 0.38 – the threshold of overfishing, and using the time-averaging principle in the access areas), thus preventing growth overfishing in the open areas, while keeping the current simple overfishing threshold for the resource overall.

Overall, three alternatives are considered in this section: the No Action (existing definition), the spatial/time averaged alternative (slightly modified version of the OFD that was proposed and not selected in Amendment 10), and a hybrid alternative (uses the overfishing threshold from No Action and the target from the spatial/time averaged alternative developed in Amendment 10). In addition, during development of this action there was a benchmark assessment for this stock. SAW50 was completed in June 2010 and it recommended new reference points based on stochastic YPR model (Alternative 3.4.1.4).

#### 3.4.1.1 No Action

Under the no-action alternative, the OFD will remain the same, spatially averaging the fishing mortality estimate over the resource as a whole. This includes averaging over closed, open, and access areas.

The current overfishing definition has a static fishing mortality threshold that applies to the entire resource regardless of whether scallops in long-term closed areas contribute to yield. The current definition (as approved in Framework 19) reads:

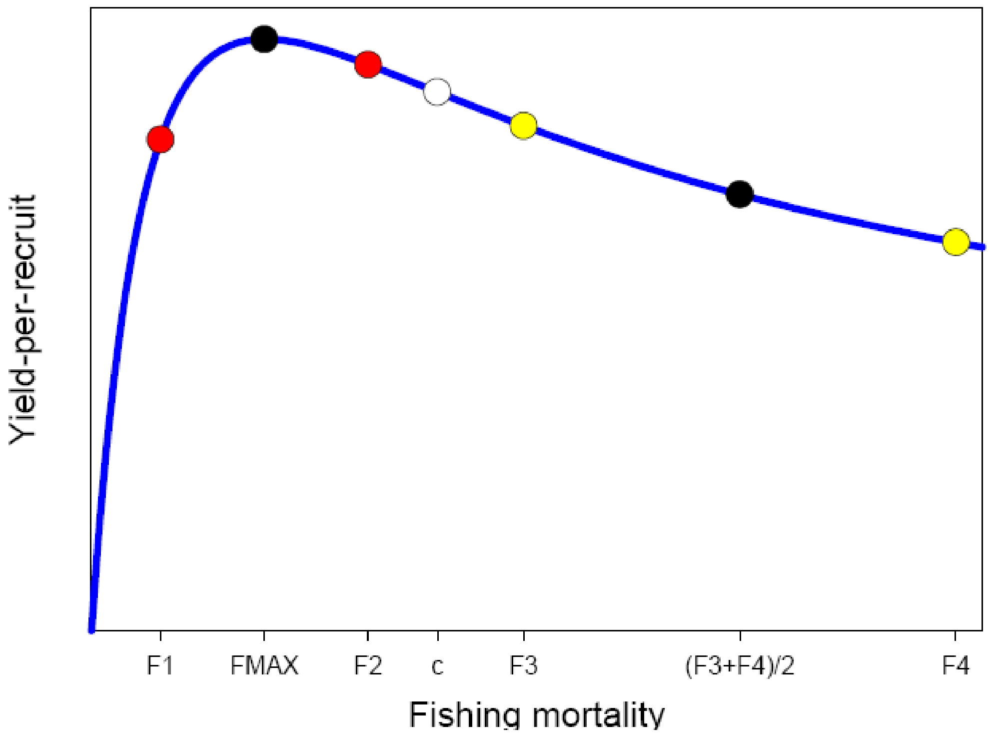
> *"If stock biomass is equal or greater than $B_{max}$ as measured by an absolute value of scallop meat (mt) (currently estimated at 108,600 mt. for scallops in the Georges Bank and Mid-Atlantic resource areas), overfishing occurs when fishing mortality exceeds $F_{max}$, currently estimated as 0.38, as approved in SAW50. If the total stock biomass is below $B_{max}$, overfishing occurs when fishing mortality exceeds the level that has a 50 percent probability to rebuild stock biomass to $B_{max}$ in 10 years. A scallop stock is in an overfished condition when stock biomass is below $\frac{1}{2}B_{max}$ and in that case overfishing occurs when fishing mortality is above a level expected to rebuild in five years, or above zero when the stock is below $\frac{1}{4}B_{max}$"*

### 3.4.1.2 Amendment 10 Overfishing Definition – Time-Averaged within Specific Areas

The current OFD underestimates the effects of fishing mortality because $F$ is averaged across closed, access, and open areas, which all receive different amounts of fishing pressure. Yield-per-recruit is reduced with a spatially averaged OFD (current) because the yield is far lower in open areas. Additionally, the biomass-per-recruit is higher because of rotational management and the long-term closures. As presented by the SSC at the October 2008 Council meeting, the maximum yield-per-recruit is produced by fishing the *entire* resource at a constant rate of $F_{max}$, so the current variation in F produces less than the expected yield-per-recruit for the entire resource (this was also discussed during the 45th SAW for sea scallops).

This time-averaged OFD would average over time within particular areas, thus considering spatial variation and allowing optimal yield to be harvested from both open and access areas. This alternative, as well as the hybrid alternative, maximizes yield from scallops available to the fishery because the biomass estimates include scallops in all areas, but the fishing mortality target is based on available biomass only, excluding scallops in long-term closed areas. The time-averaged OFD would also remove the influence of the un-harvested biomass from closed areas (EFH) from the mortality estimate in the open areas, which is the primary cause for currently setting such a low $F_{target}$. An argument that has been presented against altering the OFD is that we already have a low $F_{target}$, a precautionary measure to help mitigate open area overfishing. However, the optimal spatially- averaged fishing mortality target varies from year to year, depending on the fraction of scallops in closed areas and currently there is no systematic way of setting the target, which often leads to controversial discussions each year.

With regards to the procedure for determining the OFD for each area, closed areas (both long-term and rotational) would not be included in the fishing mortality calculation. The threshold for access areas would be set using a time-averaging principle, which will typically be higher than it is for the open areas. The threshold for the open areas is the conventional $F_{max}$. The stock is overfishing if the $F$ in the non-closed areas is higher than the number-weighted average of the combined targets for the access and open areas.




The $F_{target}$ in open areas would be constant in the proposed OFD, unlike the $F_{target}$ for access areas. The $F_{target}$ for access areas can fluctuate over time to allow more fishing pressure when they are open due to the increased biomass accumulated while they are closed. While the PDT is not suggesting an very high *F* for access areas, it is suggesting that the access areas can sustain a higher *F* than can the open areas that receive constant fishing pressure. For example, the Elephant Trunk Access Area was closed for 2004-2006, receiving an *F* of 0.0. In 2007 when the area opened it could sustain an average *F* of (2*FMSY) for about three years, and then potentially close again to allow growth of recruited scallops if high recruitment levels reoccur. It is preferred that the actual target be below the threshold set by time averaging (e.g., be below 2*FMSY).

The time-averaging within specific areas can result in various strategies that yield similar results. Below, each row will have similar yields and biomasses for a given (unspecified) area, but the rotational strategies will have slightly higher yields (between 2% and 8% higher than constant *F*):

1) F, F, F …
2) 0, 2F, 0, 2F …
3) 0, 0, 3F, 0, 0, 3F …
4) 0, 0, 0, F, 2F, 3F, 0, 0, 0, F, 2F, 3F …
5) ½ F, 3/2 F, ½ F, 3/2 F …

For example, after a closure period of three years and a planned re-open period of another three years, the time-averaged fishing mortality target is 0.4 [i.e. 0.2 times 6 years divided by 3 years (the total period as a re-opened area)]. A useful variation on this calculation (and one that is risk adverse and reduces variability in landings) is to catch scallops at less than 0.4 in the first re-opened year, at 0.4 in the second year, and higher than 0.4 in the third (and last) re-opened year, as shown in the 4th line of the example above. The first year might be fished at a rate of 80% of the time averaged target (or $F$=0.32), the second year at 100% ($F$=0.40), and the third year at 120% ($F$=0.48).

There are two potential updates to the suggested OFD from Amendment 10. First, the Mid-Atlantic and Georges Bank open areas could be split, each with their own target $F$s because of differences in growth rates and reference points. Second, instead of setting the target to 80% of the threshold, a higher percentage could be used when there are long-term closures (e.g., if 10% of all scallops were in EFH closures, then target in the open areas can be 90% of the threshold, rather than 80%).

Variations (often dictated by adaptive area rotation strategies) on the above example include the length of the closure, the length of the recently re-opened period, and the "ramping" strategy applied to the annual mortality targets in the re-opened areas. The following table shows how this would work.

**Table 42 - Example of ramped fishing mortality targets for re-opened areas, compared to mortality targets with no rotation and simple rotation with constant fishing mortality targets when re-opened.**

| Year | Year N | 1 | 2 | 3 | 4 | 5 | 6 | 7 - N | 1 | All |
|---|---|---|---|---|---|---|---|---|---|---|
| **Status** | **Open** | **CL** | **CL** | **CL** | **Re-open** | **Re-open** | **Re-open** | **Open** | **CL** | **AVG** |
| No rotation | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| Simple rotation | 0.20 | 0.00 | 0.00 | 0.00 | 0.40 | 0.40 | 0.40 | 0.20 | 0.00 | 0.20 |
| Ramped rotation | 0.20 | 0.00 | 0.00 | 0.00 | 0.32 | 0.40 | 0.48 | 0.20 | 0.00 | 0.20 |

#### 3.4.1.3 Hybrid Overfishing Definition Alternative (PROPOSED ACTION)

The hybrid alternative combines the overfishing threshold from the status quo overfishing definition with the fishing mortality target from the A10 alternative. Management is set to fishing mortality targets so that the calculation of the appropriate effort levels under the hybrid alternative will be similar to that under the A10 alternative.

The overfishing threshold will remain as status quo (spatially averaged $F$ = 0.38, changed from $F$ = 0.29 in the SARC-50 assessment). The fishing mortality target in the open areas will be set at no higher than the overfishing threshold in the open areas (currently $F$ = 0.38). In access areas, it will be set no higher than that given by the time-averaging principle (so that F may be higher than the overfishing threshold in access areas that had been closed). The spatially combined target fishing mortality must be no higher than that which gives a 25% probability of exceeding the ABC fishing mortality. Target fishing mortalities can be set below these limits but not above them.

For example, under the proposed action, target fishing mortality will be about 0.28 for the fishery overall, about 74% of $F_{MSY}$ (0.38). This overall target is the product of an open area fishing effort set at a maximum of $F_{MSY}$ (0.38), and a time-averaged fishing mortality target for each access area available to the fishery. The fishing level in open areas can be above the overall

$F_{target}$ for the fishery, but not the $F_{threshold}$. Open area F is set at or just below the threshold to prevent overfishing in open areas or growth overfishing overall.

In theory, fishing at such a spatially-averaged fishing mortality threshold could lead to localized overfishing and reduced yields. However, fishing effort levels under this alternative will be set to targets that take into account the spatially varying nature of this fishery, so that the risk of localized overfishing should be minimal. Keeping the threshold as in status quo, $F_{MSY}$ (0.38), would allow much simpler assessment as to whether or not overfishing is occurring. This alternative is favored over status quo because the unfished biomass in closed areas causes higher fishing levels in open areas leading to growth overfishing. When a higher percentage of biomass is within closed areas the status quo definition is even more ineffective.

#### 3.4.1.4 Modify overfishing definition reference points (PROPOSED ACTION)

The overfishing definition in the FMP states that Fmax will be used as a proxy for Fmsy. However, the recent scallop assessment, SAW50, approved a direct estimate of Fmsy, which is an improvement of the current overfishing definition that is based on Fmax. The Council considered this during Amendment 15 after final results were available from SAW50 and decided to include the updated results. Specifically based on results of the recent assessment, the current $B_{max}$ and $F_{max}$ used in the current overfishing definition will be replaced with $B_{msy}$ and $F_{msy}$.

Final results from SAW50 were available in August 2010. The fourth term of reference for that assessment was to, "u*pdate or redefine biological reference points (BRPs; estimates or proxies for $B_{MSY}$, $B_{threshold}$, and $F_{MSY}$; and estimates of their uncertainty). Comment on the scientific adequacy of existing and redefined BRPs."* Section 7 of the final assessment document summarizes the analyses and findings related to that term of reference. In summary, prior to this assessment, the per recruit reference points $F_{MAX}$ and $B_{MAX}$ had been used as proxies for $F_{MSY}$ and $B_{MSY}$. During the 2007 benchmark assessment, it was recommended that alternative reference points be explored because the changes in selectivity have made yield per recruit curves increasingly flat, which makes $F_{MAX}$ more difficult to estimate and sensitive to small changes in assumed parameters. Therefore, a new method for estimating reference points was explored, SYM – Stochastic Yield Model, which explicitly takes into account uncertainties in per recruit and stock-recruit relationships to estimate $F_{MSY}$ and $B_{MSY}$ using Monte-Carlo simulations.

Both the Scallop Committee and the SSC reviewed the results and agreed that the overfishing definition within the FMP should be updated to reflect new biological reference points that are based on $B_{msy}$ and $F_{msy}$.

The new overfishing definition shall read:

> *If stock biomass is equal or greater than $B_{msy}$ as measured by an absolute value of scallop meat (mt) (estimated in 2009 at 125,358 mt scallop meat in the Georges Bank and Mid-Atlantic resource areas), overfishing occurs when fishing mortality exceeds $F_{msy}$, currently estimated as 0.38, as approved in SAW50. If the total stock biomass is below $B_{msy}$, overfishing occurs when fishing mortality exceeds the level that has a 50 percent probability to rebuild stock biomass to $B_{msy}$ in 10 years. A scallop stock is in an overfished condition when stock biomass is below ½Bmsy, and in that case overfishing occurs when fishing mortality is above a*

*level expected to rebuild in five years, or above zero when the stock is below ¼Bmsy.*

### 3.4.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the limited entry program recently implemented for the general category fishery. Amendment 11 to the Scallop FMP limited access in the general category fishery and implemented an IFQ program for qualifying vessels. Several specific ideas were raised during that process but were delayed for consideration because they would require more time for development and analysis. This action is currently considering alternatives to address the following specific issues: rollover of IFQ, consideration of a general category sector application, modification of the general category possession limit, and modification of the maximum quota restriction one vessel can harvest. Other modifications related to Amendment 11 will not be considered in this action.

#### 3.4.2.1 Provision to allow IFQ rollover

The Council is considering a rollover allowance for general category IFQ permit holders. If for some reason a vessel is unable to harvest their full IFQ in a given fishing year, a rollover allowance authorizes a vessel to carry forward unused quota for use in the following fishing year.

##### 3.4.2.1.1 No Action

This alternative would maintain that IFQ expires at the end of a fishing year. A permit owner would be prohibited from carrying forward any unused IFQ into the following fishing year.

##### 3.4.2.1.2 Allow IFQ rollover up to 15% (PROPOSED ACTION)

This alternative would allow an IFQ permit holder to carry forward up to 15% of their IFQ to the proceeding fishing year. NMFS will automatically carryover any unused IFQ to the following fishing year up to 15% of their original allocation for that year.

#### 3.4.2.2 Modify the general category possession limit

The Council is considering a modification to the general category possession limit in response to requests from some of the industry that the current possession limit is not economically feasible.

##### 3.4.2.2.1 No Action

This alternative would maintain the 400 pound possession limit.

##### 3.4.2.2.2 Modify the possession limit to 600 pounds (PROPOSED ACTION)

The original alternative was to modify the possession limit up to 1,000 pounds; the Council identified the possession limit as 600 pounds at the final meeting.

**Rationale**: This alternative was included to respond to requests from the industry that the current possession limit is not economically feasible due to increased costs. This possession limit would recognize that the Council supports that the general category permit remain a “small boat” permit, but due to changes implemented by A11 that altered the fishery, as well as increased costs (e.g., fuel), a moderate increase in possession would be justified.

#### 3.4.2.2.3 Eliminate the possession limit

This alternative would eliminate the possession limit for general category vessels.

**Rationale**: This alternative was included to respond to requests from the industry that the current possession limit is not economically feasible due to increased costs. In addition, this alternative was added to recognize that A11 changed the general category fishery and since it is managed by IFQs, a possession limit is not needed. This alternative would support that A11 was a wholesale change to the permit category and the possession limit should be eliminated.

### 3.4.2.3 Modify the maximum quota one general category vessel can fish

The Council is considering this alternative to respond to input from the industry that the current ownership restrictions are not consistent. There are currently two ownership restrictions in place: 1) a restriction on the maximum amount of quota an individual can own (5%); and 2) a restriction on the maximum amount of quota that can be harvested from one platform (2%).

#### 3.4.2.3.1 No Action

This alternative would maintain the current restriction of 2% maximum quota allocation on each general category vessel.

#### 3.4.2.3.2 Modify the maximum quota one vessel can fish from 2% to 2.5% of total general category allocation (PROPOSED ACTION)

This modification would change the 2% maximum quota per vessel restriction to 2.5% of the total general category allocation. If a vessel or individual is at either ownership cap and it carries quota to the next fishing year, causing it to exceed either cap, this would not considered in violation of the caps because that vessel or individual caught less the preceding year. Carryover is limited to one year to prevent excessive carryover and uncertainty in annual catch. The carryover would not be considered extra allocation in the subsequent year that would count toward the vessel's cap.

**Rationale**: It has been argued that the two ownership restrictions together require an individual to own more than two vessels for no substantial reason if they want to own 5% of the general category fishery. This alternative would make the restrictions more compatible.

### 3.4.2.4 Allow LAGC quota to be transferred from IFQ permits

The Council asked the Committee and PDT to consider developing an alternative that would allow a limited access general category IFQ permit to be split from other permits held by the same vessel. The Interspecies Committee also discussed the issue and recommended development of an alternative that would allow quota, not the permit, to be split from the vessel, which would avoid the permit splitting issue that is consistent in all LA programs in this area. The Council then voted at the April 2009 Council meeting against allowing LAGC permit owners to permanently transfer their IFQ permit and its associated allocation independent of all other permits.

The Council voted at the April 2009 meeting to have the Committee and PDT develop alternatives that allow permanent transfer of IFQ quota, either to another IFQ permit holder or to a community-based trust or permit bank. It is noted that the NGOM permit does not need to be considered because those vessels do not receive IFQ. Additionally, the only vessels that can participate are those that already qualify for an LAGC IFQ permit.

#### 3.4.2.4.1 Allow LAGC IFQ permit owners to permanently transfer some or all quota allocation to another IFQ permit holder (PROPOSED ACTION)

The intent of this alternative is to allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to another LAGC IFQ permit holder while retaining the permit itself.

In regards to the mixing of IFQ pools that could happen under this alternative, if an LA/IFQ vessel leases in or out, the LA and LAGC pools would get mixed, but it would not impact IFQ percent shares. This would work for leases, but not transfers. For transfers, IFQs or shares would not be impacted until the following year when the total contribution factors on both sides would have to be adjusted, which would impact IFQ allocations for the next year. In general, if "mixing" is permitted by this action (Option A), additional restrictions and measures may want to be included to ensure that ownership caps and other measures put in place by Amendment 11 are maintained.

If an LA/IFQ vessel permanently transfers IFQ in or out, this may change the overall 5% and 0.5% allocations. For example, the 5% allocation would be expected to increase if an LA/IFQ vessel permanently transferred IFQ to an IFQ-only vessel. The increase in the 5% allocation could be equal to the amount transferred out (it would have to be converted somehow to IFQ-only contribution percent since the denominators are different). This has implications on the 5% ownership cap and current 2% IFQ limit per vessel platform. LA/IFQ vessels are not currently subject to those restrictions, so restrictions would need to be added to ensure that an LA/IFQ vessel could not accumulate more than the allowed IFQ. Monitoring of transferred IFQ would be adjusted within the system for IFQs and contribution factors.

> *Option A* – This allowance would apply to all LACG IFQ permit holders (including LA vessels that also have a LAGC IFQ permit).
>
> *Option B* – This allowance would only apply to LAGC IFQ permit holders that do not also have a LA permit. This option was included to prevent crossover of LACG allocation between the two LAGC permit types, 5% and 0.5% of total ACL. (PROPOSED ACTION)

#### 3.4.2.4.2 Allow LAGC IFQ permits owners to permanently transfer some or all allocation to a community-based trust or permit bank

This alternative would allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to a community-based trust or permit bank while retaining the permit itself. Conversely, it would allow a permit bank to lease/transfer the IFQ to any LAGC IFQ permit holder.

### 3.4.2.5 Implementation of Community Fishing Associations (CFAs)

At the April NEFMC Council meeting, the NEFMC passed a motion to have the scallop PDT "[r]esearch and discuss the potential use of "regional fishery associations" or something like them (permit bank) in terms of an entity being permitted to purchase IFQ with or without having to own a LAGC IFQ permit."

The PDT discussed this issue at the May 2009 PDT meeting and ultimately developed two options for the Committee to consider: 1) consider adjustments to the current sector provisions to make them more place-based and allow other entities to control quota, and 2) develop a separate RFA or CFA program with details of provisions that would be considered. The Committee only adapted 2), and requested that Staff continue to identify issues that need to be resolved and requested that the advisory panel review the details and provide input on this alternative.

Community Fishing Associations and similar entities are being developed throughout the United States, particularly on the west coast, to deal with the rationalization of various fisheries, which can negatively affect the sustainability of fishing communities. For example, with the sablefish and halibut rationalization programs in Alaska, various larger entities purchased or were initially allocated large enough quotas that it effectively hurt the sustainability of fishing communities and villages along the Gulf of Alaska coastline. To help mitigate this problem, the North Pacific Fishery Management Council, in conjunction with the State of Alaska, created Community Quota Entities, which are non-profit organizations that can hold quota on behalf of the represented community/communities and allow various fishermen to lease and fish the quota. Further, the Pacific Fishery Management Council (PFMC) is developing Community Fishing Associations to address the consolidation concerns caused by the groundfish trawl rationalization program. The PFMC is currently in development of these CFAs, but their issues are more similar to those that have been raised in New England.

Concern has been raised at recent New England Fishery Management Council meetings about consolidation of the IFQ among LAGC participants. There is concern that larger entities will buy out smaller boat permits, stack IFQ, and effectively reduce the number of vessels in ports and number of players in the general category fishery. This will more than likely have negative consequences on the fishing communities throughout New England. The Scallop PDT, now, has been tasked with developing alternatives for creating Community Fishing Organizations, which would be permitted to acquire quota for distribution throughout the geographic community it represents.

The primary concerns described at meetings are that small, independent fishermen are at risk because of escalating prices for permits and LAGC IFQ, which are preventing new local entrants into the fishery. There is concern that permits are going to leave smaller fishing communities and lead to corporate consolidation impacting historical fishing communities. One specific goal identified is to enable an entity to hold quota and lease it to qualified fishermen in their defined community. The entity would not need to own a vessel and would not have to be engaged in harvesting. Some have voiced that the organizations should be placed-based, or focused on a particular community. This alternative would consider explicit regulatory language to recognize and support *non-profit* entities that could purchase and hold permits and/or quota to be leased to qualified local fishermen at affordable rates.

#### 3.4.2.5.1 No Action (PROPOSED ACTION)

A process for future community fishing associations or CFAs would not be established in Amendment 15.

#### 3.4.2.5.2 Establish a process for Community Fishery Associations

This alternative would establish a process for the creation of Community Fishery Associations (CFAs), non-profit organizations that are allowed to hold quota (and permits if approved) on behalf of a defined community. These groups may be formed around common homeport(s) and/or landing port(s), and are designed to support local commercial fishermen. The following text provides an outline for the various required components of such an entity, including: required definitions, qualification/application, geographic designation/community affiliation, participation requirements and restrictions, Community Sustainability Plan (as outlined in Magnuson-Stevens Reauthorization Act), and other considerations for these entities.

Recently, the Pacific Fishery Management Council (PFMC) has also taken steps to address similar problems facing traditional fishing communities on the West Coast as a result of the trawl rationalization process. The PFMC is currently developing regulatory support for CFAs using language of the Magnuson-Steven Act. This proposal draws extensively on these PFMC efforts.

*Rationale*: The purpose of establishing this process is to allow greater opportunities for fishery participants to proactively engage in resource governance, provide greater flexibility for fishermen, enable communities to thrive by establishing a community-driven plan, and create outcomes that are more socially and economically beneficial for communities within the biological limitations of the fishery. These entities would also support qualified new entrants to the fishery by allocating some portion of the holdings to be leased to individuals who have harvesting experience in the local fishery and who are working to start an independent fishing operation in that community.

- **Definition of a CFA**

A Community Fishing Association may be a partnership, voluntary association or other non-profit entity established under the laws of the U.S. that is eligible to hold quota (and possibly permits) and distribute said quota/permits to permitted fishermen within the geographic community that the CFA represents. These entities will be beholden to the eligibility requirements and participation criteria governing Regional Fishery Associations as outlined in the Magnuson-Stevens Act.

The goals of establishing Community Fishing Associations are to:

1. Mitigate the potentially negative economic and social impacts of current transitions to quota management in the LAGC fishery.
2. Provide affordable local industry access to fisheries resources.
3. Provide opportunities for qualified new entrants to the fishery.
4. Preserve traditional fishing communities and necessary onshore infrastructure.

- **Qualification as a CFA**

To be recognized as a CFA, an entity must:

1. Meet the geographic designation and membership requirements (below).
2. Have the expressed support of local governing entities (county, city or port district).
3. Meet the organizational standards (below).
4. Develop an adequate community sustainability plan (MSA 303A(c)(3)(i)(IV)).
5. Be organized and maintained as a non-profit corporation under U.S. law.

- **<u>What CFAs Can Own and Lease Out</u>**

*Option A, Quota Only.* Under this option CFAs would be able to purchase IFQ which can be leased to qualifying fishermen already possessing a LAGC permit.
*Option B, Quota and Permits.* This option would allow CFAs to purchase IFQ and permits which can then be leased to qualifying fishermen within the community.

- **Geographic Designations and Community Affiliations**

CFAs must be located within the management area of the Council (Based on MSA 303A(c)(3). The geographic areas served by a CFA may overlap with the area served by another. However, a CFA may only represent one 'community' (i.e., a single management company *may not* administer multiple CFAs).

For the purposes of this program, a 'community' is defined here as either a single coastal town or small number of coastal towns that are geographically and economically interconnected. A 'small number' is intended to be near or under ten, and county boundaries may provide an appropriate guideline for delineation. For example, the ports of New Hampshire (Portsmouth, Rye, Hampton, Hampton Bays and Seabrook) all occupy one county (Rockingham), are in reasonable proximity to each other and conceivably rely on the same onshore infrastructure. They number less than ten, and therefore could be defined as a 'community' in terms of CFAs. A second example would be the ports of Plymouth County in Massachusetts (Green Harbor, Hull, Marion, Marshfield, Ocean Bluff, Plymouth, and Scituate). CFAs need not include all ports within one county, and as mentioned earlier, geographic areas served by a CFA may overlap.

Prior to approval, a CFA must demonstrate substantial support of community members and governing jurisdictions in the area it seeks to represent. Examples of such support include community petitions, and written endorsement from community leaders (mayor, etc.) or councils.

- **Participation Requirements**

The program developed by this FMP is limited to the LAGC scallop portion of the fishery, and <u>harvest of the IFQ is restricted to LAGC permit holders only</u>. These fishermen may lease CFA-held permits/quota to be harvested in compliance with all existing and relevant state, federal and international commercial fishing regulations. <u>Harvest of LAGC IFQ under a CFA is restricted to individuals that qualified for a LAGC permit under Amendment 11, unless the option to allow for new entrants is included and approved in a future CFA application</u>.

- **Organization and Operational Standards**

CFAs will establish open and transparent application and qualification criteria for the distribution of permits/quota to community fishermen. These entities will comply with existing and relevant leasing and transfer regulations that currently apply to individual permit-holders including lease reporting protocols, size-class or baseline restrictions, etc.

- **Community Sustainability Plan**

The CFA shall develop a community sustainability plan consistent with required sections of MSRA (MSA 303A(c)(3)(i)(IV) that includes the following:

1. Specification of the organization's goals and objectives and the means by which it intends to meet those goals and objectives.

2. Description of how the CFA will contribute to the social development, economic development, and conservation needs of the fishery locally, including the needs of entry-level and small vessel owner-operators, captains, and crew. The description shall include anticipated efforts to address the following as necessary to maintain the characteristic of the community or support its economic development:

a. sustaining effort by groundfish fisheries;
b. maintaining crew, processing and seasonal employment opportunities;
c. maintaining local processing activity;
d. meeting local community and municipality needs; and
e. investing in local infrastructure.

- **Restrictions on Holding Quota**

Much concern in the early stages of CFA research has been that quota will be improperly obtained or used in ways that are a detriment to the LAGC fishery and/or the same community it is designed to help, i.e. obtaining IFQ with the intent that it not be harvested. For this reason a stringent application process and monitoring plan must be implemented to be sure the CFA benefits the community as intended and overall scallop plan in terms of optimizing yield.

- **Application for Status as a CFA**

CFA applications will include:

1. Articles of incorporation and bylaws.
2. Organization chart and explanation of management structure.
3. A community sustainability plan (see above; MSA 303A(c)(3)(i)(IV)).
4. All information needed for NMFS to assess compliance with control limits.
5. Operating procedures including description of a. roles and responsibilities of the association, board members, staff, and contractors, the process and criteria by which permits/quota will be distributed, and dispute resolution processes.
5. Documentation that shows compliance with all other CFA eligibility requirements.

These applications will not be in a specific action because CFAs are a leasing mechanism which will not affect the rest of the fishery in terms of allocations, etc. Much like general category sectors, CFAs will be required to submit all application materials eight months prior to the start of the fishing year, or July 1.

- **Criteria for Evaluating Applications and Approval Process**

CFAs will be approved provided a complete application has been provided to the New England Fishery Management Council and the National Marine Fisheries Service by agreed upon deadlines. The Council will ensure that all requirements listed above are fully and satisfactorily met prior to approval, including those pertaining to geographic representation and community support. Approval will include specification of special responsibilities and considerations being afforded the CFA (e.g. the level of quota shares control that will be afforded the CFA).

- **General Participation and Special Considerations**

CFAs will participate in common with all other participants in the IFQ program and have the same rights and responsibilities, except with respect to special responsibilities and considerations provided for by the Council and through NMFS regulations. General participation includes leasing quota under provisions identical to those which apply to all other participants in the LAGC fishery.

Special Consideration – Accumulation Limits
CFAs would be obligated to remain within existing and relevant accumulation limits unless the New England Fishery Management Council decided to explicitly amend such limits in a future action. Currently, an individual permit holder can own up to 5% of the total LAGC IFQ allocation, and a sector can hold up to 20%. The ownership limit under consideration by the PFMC for a CFA is 10%. This accumulation limit recognizes that to be effective, a CFA must be able to accumulate sufficient fisheries access to support more than a single fishing operation within the community, while maintaining a relatively low cap. This action is considering a limit of 5% of LAGC IFQ for any CFA.

Special Responsibility – Reporting Requirements
CFAs would be required to report annually on specific aspects of their operations, CFA performance measures, etc. Specifically, each entity will be required to report the number of lease applications received for their permits/quota; the number, names, and characteristics of the financially independent fishing operations that leased the CFAs permits/quota; the proportion of permits/quota leased in a given year relative to the entity's total holdings; and a summary of how holdings were distributed among applicants. This will help to confirm that the quota is remaining within the community as intended.

- **Monitoring of CFAs**

The Council noted that current monitoring provisions may not encompass what is needed to track use of CFA IFQ. There will likely be need for addition of a new (VMS) code by NMFS so that individual trips can be monitored as to whether they are fishing under CFA IFQ or their own. Alternatively, the Council could decide to have the CFA be responsible for tracking its own use of IFQ, and NMFS would simply continue to track the vessel's overall landings. It also needs to be determined whether the vessel landing the scallops would still be responsible for the cost recovery payment, or if that would be the CFA's responsibility. This should be something that the CFA addresses in its "community sustainability plan."

- **Movement between CFAs**

As multiple CFAs may simultaneously support a given community, a fisherman may lease quota from more than one CFA during a given fishing year. Each permit-holder will remain bound by the existing individual harvesting and ownership caps. The relationship between a CFA and a participating fisherman who leases a permit and/or quota is terminated with the harvest of the leased pounds; from the perspective of the Council and NMFS, there is no membership or expectation of continuing connection between these two independent entities (CFA and the individual).

- **Program Evaluation**

The Community Fishing Association (CFA) program developed by the NEFMC would be reviewed approximately every three years (or when Council priorities permit) after implementation to ensure progress in achieving the stated programmatic objectives and to make any small revisions required. Individual CFAs will need to report to the Council annually with the number of participants leasing quota, the amount of quota leased/controlled, and the amount of quota harvested and the rest of the required information, as discussed above.

- **Organizational Evaluation**

Performance of individual Community Fishing Associations (CFAs) would be fully reviewed after three years of operation. Performance will be measured based on the ability of the CFA to support the objectives of the program and to help meet the needs of the fishing community. This review will result in the continued approval, conditional approval (with specific operational changes to be made), or the disapproval of the CFA by the Council and/or NMFS.

After this initial review, each program will undergo a full review every five years or more frequently if deemed necessary by the Council and/or NMFS.

### 3.4.3 Measures to address EFH closed areas if EFH Omnibus Amendment 2 is delayed

One component of the EFH Omnibus Amendment 2 is the development of alternatives for minimizing adverse impacts of fishing on EFH to the extent practicable. This includes a review and possible modification of existing EFH closed areas, as well as other measures that are in place to minimize impacts of fishing on EFH. The Council is expected to approve a final range of alternatives in November 2010. However, this timeline is not adequate enough to allow the Scallop Committee and Council to know what areas will most likely be available as potential scallop rotational areas for FY2011 and FY2012 (Framework 22). With this delay of the EFH amendment, access into Georges Bank closed areas is still limited to areas not closed to the scallop fishery for EFH under both the Scallop FMP and the Groundfish FMP.

Framework 16/39 (2004) proposed to make the two plans consistent in terms of closed areas to minimize adverse impacts on EFH, but that action was challenged because it was not done in an amendment (just a framework) and, as a result, areas closed for EFH under both Amendment 10 and Amendment 13 still apply to the scallop fishery. In most cases the two plans are consistent, with two important differences in terms of areas with relatively high scallop abundance: the northern part of Closed Area II north of the cod HAPC, and the central portion of Closed Area I south of the original scallop access area (See Figure 14). This action is considering alternatives to address the inconsistent EFH areas currently closed to the scallop fishery under both the Scallop and Groundfish FMPs.

#### 3.4.3.1 No Action

This alternative would maintain the measures in place to minimize impacts on EFH. Specifically, areas closed in Amendment 10 and Amendment 13 to minimize impacts on EFH would apply to the scallop fishery unless modified under Phase II of the EFH Omnibus Amendment (Amendment 14 to the Scallop FMP).

#### 3.4.3.2 Modify the existing EFH closed areas to be consistent with EFH areas closed under Multispecies Amendment 13 (PROPOSED ACTION)

This alternative would modify the EFH closed areas in the Scallop FMP by removing the four scallop-fishery-specific EFH closed areas that were implemented in Amendment 10 to the Scallop FMP (Figure 5 - shaded areas), and it would replace them with EFH closed areas that are identical to the EFH closed areas that were implemented in Amendment 13 to the Multispecies

FMP (Figure 5 – six hatched areas). If selected, all hatched areas in Figure 5 would be closed to minimize the adverse impacts of fishing with mobile bottom-tending gear on EFH in the Scallop FMP (portion of CAII, two areas within CAI, portion of NL Closure and area to the north, most of WGOM closure, eastern portion of Cashes Ledge Closure and area over Jeffreys Bank).

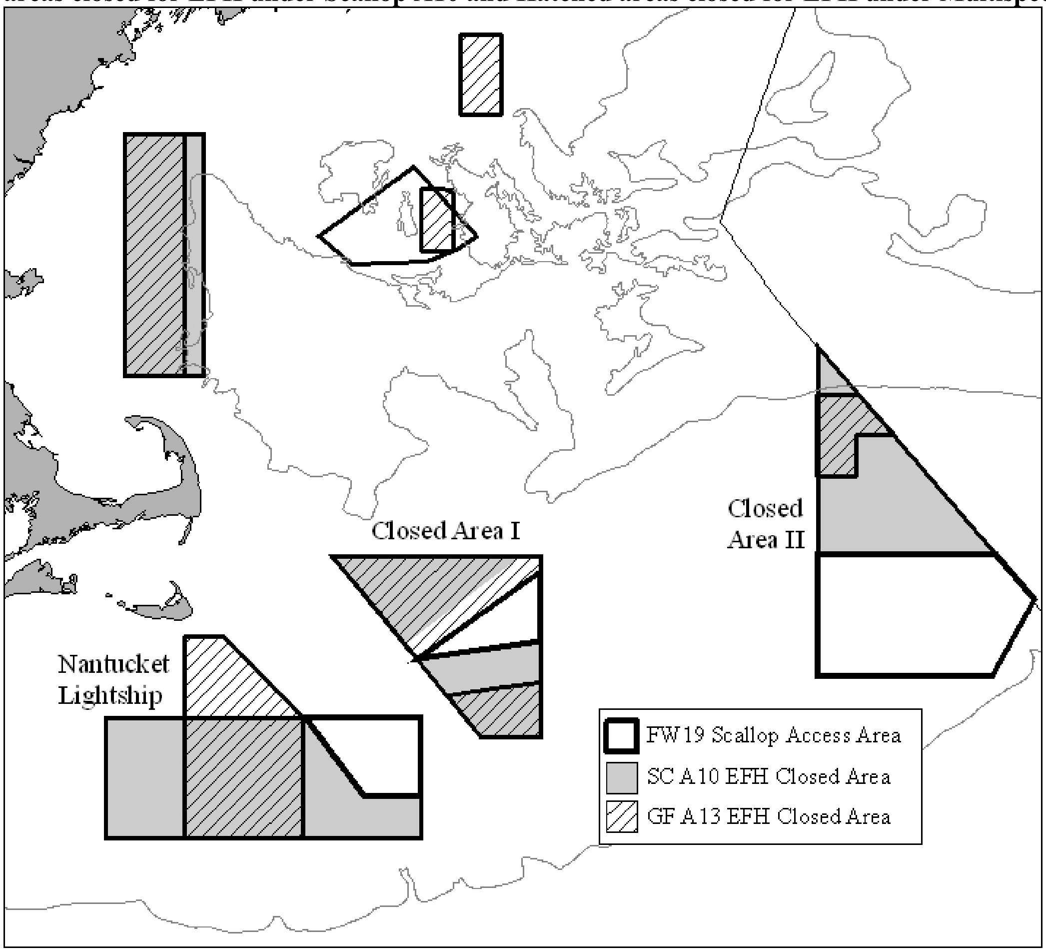
Both sets of EFH areas constitute portions of four larger areas that were closed in 1994 (CAI, CAII, NLCA) and 1998 (WGOM) to enhance spawning and reduce fishing mortality of several groundfish species. Limited, rotational scallop fishery access has been approved in some portions of three of these larger groundfish closures beginning in 1999, but the EFH closed areas have remained closed to scallop fishing since 1994 for CAI, CAII, and NL and 1998 for WGOM.

This alternative would create the opportunity for future actions to expand the boundaries of the scallop access areas within the year-round multispecies closures, provided that groundfish bycatch, mortality, habitat impacts, and any other considerations are addressed.

**Rationale**: This alternative was included in this action as a placeholder in the event that implementation of the Essential Fish Habitat Omnibus Amendment 2 was delayed. The Council discussed the fact that the EFH Omnibus Amendment 2 is the most appropriate place to evaluate and make any changes to the habitat closed areas, but because that action is delayed, this alternative would make the habitat areas consistent between the Multispecies and Scallop FMPs, as was intended by Framework 16/39. The Council did not support closing both sets of habitat closed areas to scallop gear; the current restrictions resulted from a successful legal challenge related to the modification of habitat closed areas in a framework (i.e. Framework 16/39), rather than in an amendment. By making the scallop EFH closures from Amendment 10 the same as the EFH closures in the Multispecies FMP, this alternative would have the effect intended by Framework 16/39 for the 2011 fishing year and beyond, unless habitat areas/gear restrictions are subsequently modified by EFH Omnibus Amendment 2.

The specification process for the scallop fishery could then consider access to portions of the year-round groundfish closed areas that are outside of the EFH closed areas implemented under the NE Multispecies FMP and under this alternative (hatched), provided there is ample scallop resource to support access and all impacts are considered on finfish bycatch and habitat. Access could be considered in any of the areas that are “empty” or “shaded” in Figure 14.

**Figure 14 – Habitat closed areas and groundfish mortality closed areas that apply to the scallop fishery (Solid areas closed for EFH under Scallop A10 and Hatched areas closed for EFH under Multispecies A13).**




### 3.4.4 Measures to improve research set-aside program

#### 3.4.4.1 No action

No changes would be made to the existing research set-aside program.

#### 3.4.4.2 Publish federal funding opportunity as early as possible (PROPOSED ACTION)

In recent years the federal funding opportunity announcement (FFO) has been published late. This alternative would request that NMFS publish the announcement by June before the beginning of the following fishing year.

**Rationale**: Most research under the RSA program is time sensitive (biomass surveys of access areas before openings, research during or before a seasonal closure for turtles etc). If the process starts late because the FFO is after the start of that fishing year, then the effectiveness of the RSA program and the selected research projects is compromised; timing of the FFO is critical so that research projects fulfill management needs. If the FFO could be published by June, then all the necessary procedural steps could be taken before the start of the fishing year, maximizing time for research and compensation trips before the end of the fishing year. Even if final specifications are not approved to be included in the FFO, the Council requests that the agency include ranges for TACs so that the announcement can be published as soon as possible.

#### 3.4.4.3 Extend the RSA program to be multi-year (PROPOSED ACTION)

Currently research priorities, TACs for RSAs, and approved research projects are limited to one year. This alternative would modify that to be the length of time within a specification action. For example, this action will include specifications for FY2011 and FY2012; therefore the RSA TACs available and research proposals could also span up to two years. The solicitation would span a two year time frame, corresponding with the framework process. Projects could be awarded for one or two years.

**Rationale**: This alternative would increase flexibility for the applicant, reduce time and resources spent on the application and review process, and provide funding for some longer term projects. There are certain management needs that would benefit from two years of work rather than a single year. This alternative would also reduce the burdens associated with the application process, review process, and issuance of experimental fishing permits (EFPs) when necessary.

#### 3.4.4.4 Modify open area RSA allocation from DAS to pounds (PROPOSED ACTION)

Currently 2% of open area DAS are set aside for the RSA program. This alternative would change the way open area effort is allocated for research from DAS into pounds. If the PDT determines that part of the total research set-aside can be harvested from open areas that amount of catch will be included in terms of pounds, not DAS.

**Rationale**: Fewer research proposals request funds from open areas because catch in open areas is lower than access areas and catch rates vary such that there is potentially more risk if catch rates are lower than expected. If the RSA allocation from open areas was in pounds rather than DAS, then catch from compensation trips would be more straight-forward and vessels would have a set amount of catch rather than DAS.

#### 3.4.4.5 Modify entire RSA allocation to a fixed poundage rather than a percent (PROPOSED ACTION)

Currently 2% of access area TACs and open area DAS are set aside for the research set-aside program. That amount of TAC and DAS varies depending on the total TAC and DAS for the fishery, but the percent stays the same (2%). The RSA awards go through the Federal grants process. Under the current RSA grant process, in the initial year of the biennial framework, grant awards are delayed until the framework is approved. Approval of framework actions has been delayed until May or June, two or three months after the start of the fishing year. This has caused various problems within the research community when it is preferable to begin research at or near the start of the fishing year. This alternative would modify the scallop RSA program so that a set amount of catch was available year to year, rather than a set percentage of catch. For example, 1.0 million pounds would be set aside for research rather than a set percent of the total estimated catch (one million pounds is 2% of 50 million pounds). The one million pounds would be broken down by area, but it would not necessarily equal 2% of each area open to the fishery. In each framework action the Council will identify the areas from which RSA poundage will be removed.

At the September 2009 Council meeting (when it took final action on Amendment 15), the Council identified that the total poundage should be 1.25 million pounds based on input from the Scallop Advisory Panel and Committee (Alternative3.4.4.7). Total projected catch for the fishery may vary from year to year, but the amount of catch set-aside for research will be constant – 1.25 million pounds. Assuming a projected catch of 50 million pounds for the fishery, 1.25 million pounds equals about 2.5%; higher than recent levels to recognize the importance of research for the success of the area rotation program. This value could be changed in a future framework action (increase or decrease) and has therefore been added to the list of frameworkable items under this action.

**Rationale**: Allocating a fixed amount (in pounds rather than a percent) would enable the grant awards to be issued earlier because the agency would know the total amount of TAC available for research before the framework is approved – it would be a set amount that is the same poundage every year. The specific areas that would have available RSA would be identified in the framework, but not knowing the exact area should not impact the timing of solicitation and awards process. For example, in the first year of a framework process, the actual area that an RSA award has been given would not be approved by NMFS until June of that year when NMFS approves and implements the framework. However, even though this is several months after the fishing year has begun, RSA awards could still be made based on total scallop pounds needed to fund the research. Recipients could either chose to wait until NMFS approval of the framework to begin compensation fishing within approved access areas, or vessels could begin compensation fishing in open areas prior to approval of the framework. The intent of this alternative is to help timeliness of the scallop RSA program; by having a set amount announcements and awards (in pounds) should be able to be given and vessels can either wait until the framework action is implemented to have area specific access, or can fish in open areas before final area specific awards are given. This should only be an issue for the first year of a framework; area specific RSA pounds will be known for years 2 and 3 in the future; however year 3 will likely be replaced with a subsequent action.

#### 3.4.4.6 Separate RSA TAC into 2 subsets (survey and other)

This alternative would separate the RSA TAC into 2 subsets – 1) survey related work and 2) other research priorities. The Council identified survey related work as the topic with highest priority in the recent research priorities for 2008 and 2009, and dividing the research TAC will provide more emphasis and funding for survey work.

**Rationale**: The Scallop PDT has voiced that assessment of biomass in access areas is critical for the rotational system to work effectively. This change will not ensure that all areas are surveyed, but it should increase emphasis on survey related research proposals since at least one half of the research TAC will be reserved for that topic.

#### 3.4.4.7 Remove additional TAC specific for survey work in addition to 2% set-aside, with allocation of 1.25 million pounds (PROPOSED ACTION)

This alternative would add an additional 1% set-aside for access area surveys. The existing 2% set-aside would remain, but it would focus on other projects related to other research priorities. Therefore, there would be a total of 3% set-aside; 2% for general research topics and an additional 1% that would be reserved for survey work in access areas ready to re-open. It is understood that if an alternative is selected that converts % set aside into a poundage that would apply to this alternative as well.

At the September 2010 Council meeting, the final action meeting on this amendment, this alternative was modified based on the intent of the Council's motion. To clarify, since the Council adopted a set poundage rather than a percentage (Alternative 3.4.4.5) this alternative is in terms of pounds, and not a percent. Furthermore, rather than 3% of the long term estimate of 50 million pounds of total harvest used as an example for setting set-aside values, the Council decided to specify 1.25 million pounds, which is 2.5%, not 3% as this alternative originally considered. So the Council is definitely supportive of increasing the total set-aside for research to be at levels higher than the current 2%, but decided to increase the set-aside to closer to 2.5%, and not 3%. Furthermore, the Council decided not to include Alternative 3.4.4.6 based on input from the PDT, AP and Committee. Feedback was clear that dividing the RSA set-aside into two separate pools of funding made the program less flexible and that was not a desired outcome. At the AP and Committee level it was stated that in some years more set-aside should go to resource surveys, and in other years that amount could be less; putting a limit on what portion of set-aside can be used for a particular topic was not favored. So based on intent of the final Council motion, this alternative has been modified that the set-aside should not be sub-divided, even if additional set-aside is allocated.

**Rationale**: This alternative would recognize that assessing biomass in access areas is critical; therefore, additional set-aside should be available for that purpose if needed. This alternative would also recognize that other research topics are also important, that is why the Council decided to set the initial set aside poundage at 1.25 million pounds, closer to 2.5% of the total harvest. In order to be consistent with the final Council motion, TAC set-aside for research will not be subdivided, it will be awarded based on the priorities identified in the announcement and the results of the technical and management review process of proposals.

#### 3.4.4.8 Rollover of RSA TAC

This action includes five alternatives for rollover of RSA TAC.

##### 3.4.4.8.1 Rollover of unused RSA TAC to the next fishing year

Unused RSA TAC would rollover to the RSA funding announcement the following year.

##### 3.4.4.8.2 Rollover of unused RSA TAC to second solicitation in same fishing year

Unused RSA TAC would rollover to a second announcement for the same year. All TAC would still need to be harvested by the end of that fishing year.

##### 3.4.4.8.3 Rollover of unused RSA TAC to same individuals for program development funds

Unused RSA TAC would be allocated to the same individuals that received TAC that year so that those individuals could use small amounts of TAC to support investigation of smaller research projects related to the same projects.

##### 3.4.4.8.4 Rollover of unused TAC to help fund observer program

Unused RSA TAC would rollover to the industry funded observer program.

#### 3.4.4.8.5 Rollover of unused TAC to compensate awarded projects (PROPOSED ACTION)

If updated analyses suggest that the price per pound estimates used in the FFO were low, or if all research TAC was not allocated for whatever reason, this alternative would allow the agency to allocate unused TAC to compensate awarded projects or to expand a project rather than having that RSA go unused. A project that was already awarded RSA would be permitted to apply for additional TAC to expand their research project, or as compensation if the price per pound was less than estimated and there is available TAC to allocate.

### 3.4.4.9 Extension for harvesting compensation TAC (PROPOSED ACTION)

Currently all RSA TAC has to be harvested by the end of that fishing year. This measure would allow a grace period during which the applicant could harvest compensation TAC beyond the end of the fishing year if an applicant cannot harvest their RSA pounds because, for example, their vessel broke. The Scallop Committee suggests a limited time period of one month to one quarter of the year. At the final Council meeting the period of time identified was up to three months, ¼ of a year. Vessels would be allowed to harvest RSA compensation before June 1 into the next fishing year, compared to March 1 the start of the next fishing year.

### 3.4.4.10 Increase public input of RSA review process (PROPOSED ACTION)

This is not an alternative that would require changes to the current regulations, but two specific suggestions were made about how public input could be increased in this process. First, it was suggested that the Scallop Advisory Panel could recommend research priorities directly to the Scallop Committee to consider. Second, more advisory panel members could participate in the management review panel of research proposals.

### 3.4.4.11 Regulations from which RSA projects are exempt (PROPOSED ACTION)

This section includes a list of the measures from which RSA funded projects may be exempt. This list is restricted to measures implemented by the Scallop FMP. A researcher would *not* need to apply for an experimental fishing permit if the project wanted to be exempt from the following restrictions. The project would need to list the measures it wants to be exempt from in its RSA proposal.

The list of measures includes:

- Crew restrictions
- Seasonal closures in access areas (i.e. turtle closure in Elephant Trunk in September – October)
- Requirement to return to port if fishing in more than one area

## 3.4.5 Measures to change the scallop fishing year

The scallop fishing year is out of sync with the framework adjustment process and the timing of when the scallop survey data become available for analysis. As a result, actions have not been implemented at the start of the fishing year, TACs have been misestimated due to reliance on older data, and extra actions have been required to compensate. The Council has considered changing the scallop fishing year several times in the past, but each time the Council decided to maintain the status quo of March 1. One reason the Council is again considering modifying the scallop fishing year is in response to new requirements for ACLs. If the Council decides to allocate ACLs across various FMPs, it may be useful for FMPs to be on the same fishing year to the extent practicable (i.e., May 1 to be consistent with the Groundfish FMP).

#### 3.4.5.1 No Action

This alternative would maintain the March 1 start date for the scallop fishing year.

#### 3.4.5.2 Change start of fishing year from March 1 to May 1

This alternative would modify the start of the scallop fishing year to May 1.

**Rationale**: This alternative would improve integration of best available science into the management process. Moving the start of the fishing year back even two months allows for needed time to process, analyze, and integrate survey data from the current year into management decisions for fishery specifications the following year. This alternative would be most effective is the federal survey can be moved earlier in the year and data were available earlier in the summer (June rather than September).

#### 3.4.5.3 Extend scallop specification packages with third year default measures (PROPOSED ACTION)

Fishery specifications in the scallop fishery are generally set every two years. This alternative would extend the fishery specification process to include a third year of allocation measures that would be effective if subsequent framework actions are delayed. Rather than having specifications rollover from a previous year, this alternative would have specifications be set for three years at a time with the understanding that the third year measures would be superseded by the next specification package as soon as it was implemented. To be clear, this alternative would not change the start date of the fishing year. The start date would remain March 1.

**Rationale**: At the November 2010 Council meeting this alternative was added to the amendment. It is clear that timing is an issue for this FMP in terms of being able to utilize the most recent year of survey data and getting measures implemented before the start of the fishing year. Amendment 15 considered pushing the start date back to May 1 to alleviate this timing issue and potentially better integrate this plan with the groundfish plan since the scallop fishery receives an allocation of yellowtail flounder bycatch. During development of this action and during the public hearing process there was overwhelming opposition to changing the scallop fishing year to May 1. In addition, initial concerns about integrating the scallop and groundfish fishing years to improve ACL management were somewhat diminished. Instead, a compromise was supported that would reduce impacts of measures rolling over when an action was delayed.

## 3.5 ITEMS TO BE ADDED TO THE LIST OF FRAMEWORKABLE ITEMS IN THE FMP

### 3.5.1 Modify the general category possession limit (PROPOSED ACTION)

Regardless of whether Alternative 3.4.2.2.2 or 3.4.2.2.3 are selected (modifications to the general category possession limit) this alternative would add modifications to the possession limit to the list of frameworkable items so that issue could be considered by framework action in the future.

### 3.5.2 Adjustment to aspects of ACL management (PROPOSED ACTION)

This action is considering implementing a new management strategy under ACL management that will use many new measures. All of the measures specified in this action would be able to be modified through framework actions. The specific ACL related measures that could be modified by framework include: modifying associated definitions and specification of OFL, ABC, ACLs and ACTs, all of which are specifically intended to be changed in future frameworks or specification packages as new information becomes available about the resource and fishery; the buffers identified for management uncertainty or scientific uncertainty (ABC control rule); accountability measures for scallop ACLs and other sub-ACLs allocated to the scallop fishery; monitoring and reporting requirements associated with ACLs, timing of AM measures, and new ACLs that are not currently part of this program.

### 3.5.3 Fishing power adjustments

If selected in Amendment 15, it is understood that these could be modified at a later date for a variety of reasons.

### 3.5.4 Adjusting EFH closed area management boundaries (PROPOSED ACTION)

This amendment considered modifying specific EFH boundaries to make them consistent with the EFH areas closed under the multispecies plan. The impacts on the resource, EFH, and fishery related businesses were considered in Section 5.0. In addition, Phase II to the EFH Omnibus Amendment is considering impacts of modifying EFH boundaries in a more general way. Therefore, in the future EFH boundaries can be adjusted by framework. That future action would need to include an analysis of the impacts of the specific boundaries considered.

### 3.5.5 Adjusting research set-aside allocation (PROPOSED ACTION)

This action sets the research set-aside allocation at 1.25 million pounds, regardless of what the total projected catch for the fishery is. In the future the Council can adjust this value, up or down, by framework action.

## 3.6 CONSIDERED AND REJECTED ALTERNATIVES

During development of this action, the measures in this section were considered but rejected for various reasons; the "rational for rejection" explains the primary reason why the Council chose not to pursue these alternatives in this amendment.

### 3.6.1 Convert open area DAS into access area trips with possession limits

Access area trips have a possession limit per trip, so there is high certainty in terms of potential catch per unit of effort. On the other hand open area effort is not subject to a catch limit. There are other measures that limit catch in open areas such as gear restrictions and crew size limits, but catch rates vary per vessel, area, season, etc. Furthermore, vessels can adjust their fishing power by making adjustments to their vessel that are not fully incorporated in the estimate of fishing mortality. As a result, there is less certainty in catch and mortality from open area effort. Vessels are allocated the same DAS in each permit category, but individual catch per day varies.

One way to reduce this level of management uncertainty is to convert the allocation of open area DAS into trips (with a possession limit) in areas outside of access and closed areas. This approach would reduce uncertainty because each vessel would be limited to a maximum catch per trip. Ultimately, scientific uncertainty would be reduced as well because future estimates of catch would be more certain. Ultimately, this alternative would allow the buffer between the ACL and ACT to be reduced or even eliminated, and arguably the buffer between OFL and ABC could be reduced as well because catch would be more certain. The PDT did not yet identify a recommendation for how much the buffer should be reduced.

*Rationale for rejection*: This alternative was originally raised at a Committee meeting when potential measures for complying with ACLs and potential turtle restrictions in the Mid Atlantic were being discussed. Revisiting open area DAS management was discussed in the context of those two issues since one may require effort reductions in certain areas and seasons (turtle issue in the Mid-Atlantic) and increased certainty in catch (ACLs). This output control would increase certainty in catch from open areas compared to DAS. However, the PDT identified several potential issues with this approach related to scallop fishing mortality.

The PDT discussed that while this alternative would ensure a certain catch, it would not necessarily be linked to a certain fishing mortality rate, and ensuring a specific fishing mortality rate is more important in terms of preventing overfishing. It was pointed out that one benefit of open area DAS is that they are, in a sense, self-regulating. If projections are high and there is less biomass available, then catch per DAS will decline accordingly. However, if vessels were given a possession limit, they would have a higher F to catch that poundage if biomass is lower than estimated. Also, size of scallops harvested is an important issue to consider. When vessels are under DAS the potential to target smaller scallops is reduced; however, under a possession limit per trip vessels are more likely to catch their possession limit however they can (i.e. harvest more smaller scallops if that is what is available). Concern was expressed that assuming the benefits of access area trips to the open area was not appropriate because catch rates are very different.

In addition, there have been some legal discussions related to whether this alternative would essentially be an IFQ triggering referendum requirements etc. Currently the limited access fishery is allocated fishing opportunities in a combination of DAS to be used in open areas and a fixed number of trips with possession limits that can be used exclusively in specific access areas. This alternative would convert the open area DAS into trips with possession limits in areas outside of access and closed areas, or “open areas”. As a result, the full allocation for the year would be a specified number of trips with possession limits. Some concerns were raised that may essentially be the equivalent of allocating a quota or fixed percent of total TAC. In addition, preliminary economic analyses indicated that how the trips are allocated (equal or different possession limits based on historical data) would have substantial differential impacts. The fairness and flexibility issues with this alternative compared to DAS management would have to be considered in detail. Therefore, since this action needs to be implemented by March 1, 2011 to comply with ACL requirements, the Committee recommended this approach be moved to the considered and rejected section because of the timing concerns and the potential impacts on the scallop resource and fishing vessels highlighted by the PDT.

### 3.6.2 Seasonal closure of the entire stock area (in-season).

The Council directed the PDT to not further develop this alternative, but the gist is that when the YTF sub-ACL is projected to be reached for the entire stock area, the scallop fishery would close.

### 3.6.3 General Category AM

***Option 2 – Overage would be reduced with an additional 7% applied***

### 3.6.4 Consideration of a general category sector application

One specific sector application has been received (Appendix II – attached to this DEIS). The Committee reviewed the application and passed a motion to include it in Amendment 15 – but with no exceptions. The sector would be permitted to apply and be approved in this action, but only under the existing sector regulations. Specifically, the only measure that sector vessels are explicitly exempt from is being able to exceed their individual IFQ. If vessels in the sector combine IFQ, how the total IFQ is landed in terms of the vessel platform is not specified. The other exemptions this sector has requested in their application were not supported for inclusion in Amendment 15.

The Committee learned that this group is no longer interested in becoming a sector, so the alternative was moved to the considered and rejected section of this action.

### 3.6.5 Stacking alternatives

The Committee discussed several alternatives related to stacking that were rejected for a variety of reasons. The alternatives below were rejected because the final DEIS includes a pared down list of options that will limit or reduce the risk of increased fishing power as a result of stacking.

#### 3.6.5.1 Restrict stacking to 2 permits and both would have to be from the same permit category (FT, PT, OCC) but not necessarily the same vessel baseline

Vessels would be permitted to stack but would be restricted to permits within the same scallop permit category. A full-time permit could be stacked on a full-time vessel, but a part-time permit could not be stacked on a full-time vessel.

#### 3.6.5.2 Fishing power adjustment alternative based on gear and wheel size

The specifics of this alternative were never developed completely. An advisor suggested this as an option, but the Committee was concerned about including it because NMFS does not track the data necessary for this limitation, so this approach could not currently be implemented.

#### 3.6.5.3 Equal fishing power adjustment alternative that would be a flat tax or percentage reduction regardless of permits being stacked

All vessels would be subject to an adjustment regardless of whether permits are from different vessel baselines. For example, allocations from the second permit would be reduced by some percent (i.e. 5% or 10%) if stacked with another permit. The same percentage would apply for all permits.

#### 3.6.5.4 No fishing power adjustment for permit stacking or leasing

The Scallop Committee recommended that this alternative be rejected because they support keeping capacity neutral. If no adjustment or restriction is applied, there is more risk that fishing power could increase as a result of stacking and leasing if permits from lower fishing power vessels are moved to vessels with higher fishing power.

### 3.6.5.5 No restrictions on number of permits that can be stacked

This alternative would allow a limited access scallop vessel to have multiple limited access permits stacked on one vessel – no restriction on the number of permits that could be stacked. A vessel would be permitted to have any combination of full-time, part-time and/or occasional limited access scallop permits. The Council recommended that this alternative be rejected at the October Council meeting.

### 3.6.5.6 Sideboard for bycatch with stacking

With the addition of the restriction above – may not be necessary to have this alternative anymore. Provided that all permits from the vessel that is relinquishing it's scallop permit (Vessel B) go with the vessel that is purchasing the scallop permit (Vessel A), then Vessel B will not be permitted to fish for anything it used to have a permit for.

*Rationale for rejection*: The stacking related alternatives described above were rejected for a variety of reasons. Primarily, the Council wants to maintain restrictions on who can stack permits so that fishing power does not increase as a result of stacking. The intent of the stacking alternatives left the in DEIS would increase flexibility and efficiency for limited access vessels, but maintain or reduce capacity by preventing increased fishing power from permits that have been stacked. The Council rejected the alternative with no limit on the number of permits that can be stacked because the intent of the stacking alternatives is that they are limited in nature – a mega vessel with lots of allocation is not the intent. The sideboard alternative was rejected because it was modified that all permits would have to be stacked – so a vessel would not be left with other permits if it stacked its scallop permit.

### 3.6.5.7 Permit leasing

This alternative would only allow a vessel to lease all of its allocation (open area DAS and access area trip allocations) on an annual basis. This alternative would prohibit a vessel from using some of its allocation to harvest scallops and lease out some of its allocation of DAS or access area trips.

*Rationale for rejection*: This alternative was rejected because the DEIS includes an option for DAS leasing and access area trip leasing – so this would be redundant. If both those leasing options are selected, it is assumed that a vessel could essentially lease its full allocation of DAS and access area trips, so this full permit option is not necessary. This would be more restrictive and would reduce flexibility than if vessels were permitted to lease DAS and/or access area trips separately.

### 3.6.6 Individual fishing quota (IFQ) management

In general, permit owners would be allocated scallop catch in pounds rather than DAS and access area trips. It has not been defined if the allocation would be equal for permits within the same permit category, based on historical catch levels, or some combination of the two. It has not been determined if quota would be transferrable or if any other restrictions would be considered like maximum ownership restrictions, vessel upgrade restrictions, etc.

*Rationale for rejection*: There was very little support for IFQs expressed during scoping; in fact, most spoke against consideration of an IFQ program in this amendment. The primary need for this action is to comply with new MSRA requirements related to ACLs, which need to be implemented by March 1, 2011. Concerns were raised about the time needed to develop and analyze a full IFQ program, including required 2/3 referendum support in New England, so timing was a serious reason this alternative was rejected for this action.

### 3.6.7 Measures to revise how the NGOM TAC is calculated

The scoping document included an option to consider alternative ways to calculate the hard-TAC that is used to manage general category scallop fishing in the NGOM. Amendment 11 adopted a hard-TAC for that area that is based on historical landings from the NGOM area since there is no stock assessment of this area. Currently the hard TAC for the area is 70,000 pounds. The Council does have the authority to revise that value in future frameworks, but the process for setting the TAC is the same until a formal assessment of the resource in that area is available.

One scoping comment from the Maine Department of Marine Resources recommended that these three options be considered. These three ideas were discussed at the July 8, 2008 Scallop Committee meeting and it was recommended that they be moved to the considered and rejected section.

#### 3.6.7.1 Landings from state waters should not count against NGOM TAC so that people can still fish in state waters after the federal TAC has been reached

#### 3.6.7.2 GC scallops caught in the NGOM should not count against IFQ tailored to scallops outside the NGOM.

#### 3.6.7.3 All scallop vessels should abide by the 200 lb daily limit in the NGOM, instead of allowing the LA vessels 18,000 lbs while restricting all others.

*Rationale for rejection*: These ideas are focused on restrictions in the NGOM, and not alternative ways to calculate the TAC, thus the Committee recommended they be rejected. It was discussed that the NGOM program is not perfect, but the Council discussed these precise aspects of the program during development of Amendment 11 and decided that in order to ensure that the TAC is not exceeded, all landings in the area would have to count against the TAC (including landings on IFQ and limited access vessels fishing, and from state waters on all federal vessels). Amendment 11 was specific in what catch should be considered in calculating the TAC and what catch should count against the TAC once the fishery begins. The actual TAC can be changed by framework, but the foundation of what catch history is used, what catch is applied against the TAC, and what catch is not applied should potentially be considered in an amendment. The Council reviewed the status of alternatives in Amendment 15 at the November 2008 Council meeting and left these alternatives in the considered and rejected section.

### 3.6.8 Allocation of general category IFQ by area

Under Amendment 11, a limited access general category vessel is allocated an annual IFQ based on their contribution to historical landings. The allocation is not area-specific and a vessel is authorized to harvest their quota from any area (open areas or access areas until the fleetwide maximum number of trips is reached for that area). This section is considering allocating IFQ specific to each area so a vessel would be restricted to catch (or trade) their IFQ by area.

#### 3.6.8.1 No Action

This alternative would maintain the current IFQ allocation program as an overall allocation that is not area specific. A vessel is authorized to harvest their quota from any area (open areas or access areas until the fleetwide maximum number of trips is reached for that area).

#### 3.6.8.2 All IFQ permit holders would receive area-based allocations

All qualifying IFQ general category vessels would receive area-based IFQ based on their contribution to historical landings. For example, if a vessel's contribution factor is 0.25% of the total general category fishery then that vessel would receive 0.25% of the TAC available to the general category fishery in all areas open to that fishery in a given year. Hypothetically, in 2009 if 0.25% equals a total allocation of 6,250 pounds, rather than receiving an overall allocation of 6,250 pounds, a vessel would receive 3,250 pounds from open areas, 500 pounds from Closed Area I, 500 pounds from Delmarva, and 2,000 pounds from Elephant Trunk.

#### 3.6.8.3 Only IFQ permit holders above a certain contribution factor level would receive an area-based allocation

The Committee developed this alternative to reduce administrative burden of Alternative 3.6.8.2. This alternative would only allocate area-specific quota to individuals that qualify for IFQ above a certain percentage. **The exact amounts have not been identified yet,** but for example, all qualifiers would receive a general IFQ (not area specific quota) unless they qualify for **1%** or more of the total general category allocation. The table below shows several hypothetical examples of how this alternative would work for different vessels.

**Table 43 – Hypothetical example of area specific allocations for general category IFQ permits**

| Contribution Percentage | Open Area | Elephant Trunk | Delmarva | Closed Area I | Total |
|---|---|---|---|---|---|
| **0.10%** | N/A | N/A | N/A | N/A | 2,500 |
| **0.25%** | N/A | N/A | N/A | N/A | 6,250 |
| **1.0%** | 13,000 | 8,000 | 2,000 | 2,000 | 25,000 |
| **2.0%** | 26,000 | 16,000 | 4,000 | 4,000 | 50,000 |

**N/A** – Since these vessels qualify for less than 1% of the total general category allocation they would receive an IFQ allocation that is not area specific.

*Rationale for rejection*: This alternative was designed to provide the benefits of access areas to individual general category vessels that are more "directed" and have a greater dependence on the scallop resource compared to other general category vessels that fish for other species. However, the majority of general category qualifiers are vessels that fish for a variety of species and have qualified for lower amounts, thus may not be as inclined to fish in access areas, and in some cases may not want area allocations in various access areas up and down the coast. There would likely be burdens associated with relatively small allocations per area and the need to trade area access, which would increase administrative burden as well. A handful of industry members that originally supported these alternatives during Amendment 11, informed the Advisory Panel and Committee during this action that this approach may not be feasible; therefore the Committee recommended moving it to the considered and rejected section.

### 3.6.9 Separation of YTF incidental catch TAC between LA and LAGC fisheries

This alternative would take the total YT TAC allocated to the fishery for access areas on GB and divide it between the LA and LAGC fleets. It would likely be divided the same as the scallop TAC (approximately 95% for the LA fleet and 5% for the LAGC fleet). Therefore, if one component of the fishery caught their allocation of YT bycatch in an access area, the other component of the fishery could remain fishing in the access area.

*Rationale for rejection*: The Committee recommended this option be considered and rejected for the same reasons it was rejected in previous action – NMFS is concerned there is no feasible way to monitor such a small bycatch TAC in real time. The total YT TAC is small to begin with and if only 5% of that is allocated to the general category fishery it is likely that bycatch information would not be available before the area should close.

#### 3.6.9.1 Limits on effort in other directed fisheries from vessels that have leased scallop DAS and/or access area trips

These alternatives would ensure that catch in other fisheries that scallop vessels have permits in does not increase as a result of leasing. The Committee included consideration of several alternatives designed to prevent increased mortality in other directed fisheries that scallop vessels have permits in. For example, if Vessel A leases all its scallop effort to Vessel B, should Vessel A be constrained to prevent increased capacity in other fisheries as a result of leasing in the scallop fishery. With leasing, the Scallop Committee intends to keep capacity conservation neutral in both the scallop fishery and other fisheries that scallop vessels participate in.

*The Scallop Committee has requested that the Interspecies Committee consider this issue and these specific options as soon as possible. Interspecies Committee met on Feb 18 and recommended that the Scallop Committee move this alternative to the considered and rejected section. Primary reason is - no legal authority to manage other fisheries unless there is a link to scallop conservation. Interspecies Committee recommends that the Scallop Committee move these alternatives to the considered and rejected section.*

Include several sideboard alternatives for other directed fisheries prosecuted by permitted scallop vessels that lease allocation to another vessel:

1. no restriction on fishing in other fisheries vessel has permit for
2. limit catch of other directed fisheries to vessels "best year" from historical landings
3. if lease more than 50% of total effort (DAS and access area trips) the vessel would not be able to participate in other fisheries
4. if lease any amount, must "stand down" from all fisheries for the number of days/trips equal to the lease
5. if lease any amount, a vessel not permitted to fish in other fisheries

### 3.6.10 Revise the opening date of access areas on Georges Bank

A member of the Committee asked if the dates of the access area openings could be changed to a time that reduces yellowtail bycatch. This has been considered but it is not an acceptable as an AM, it is just a measure to reduce bycatch. The Committee included it in case it can be considered an AM or considered in a possible joint framework (FW21 or 22). A member of the audience pointed out that part of the reason the date is currently set at June 15 is because it's just before peak spawning and the weather is more ideal. This alternative was rejected because it was noted that this does not qualify as an accountability measure based on how NMFS is interpreting the new AM requirements; this is not a specific action that is triggered based on an ACL being exceeded.

# 4.0 DESCRIPTION OF AFFECTED ENVIRONMENT – SAFE REPORT

The environment affected by the sea scallop fishery as a whole is described in Section 4 of Amendment 11 to the Sea Scallop FMP (NEFMC, 2007). That description is incorporated herein by reference. This section serves as the 2010 SAFE Report, which updates the data and analysis of the fishery through the 2009 fishing year, including an updated assessment of the scallop resource and new analyses of limited access and general category scallop effort distribution.

## 4.1 THE ATLANTIC SEA SCALLOP RESOURCE

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

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

Meat weight can quadruple between the ages of three to five (NEFSC, 2004; NEFMC, 2007). Meat weight is dependent on shell size, which increases with age, and depth. Meat weight decreases with depth, possibly due to a reduced food supply (NEFSC, 2007). Both the Mid-Atlantic and Georges Bank showed a drop in meat weights between August and October, coinciding with the September-October spawning period (Haynes, 1966; Serchuk and Smolowitz, 1989; NEFSC, 2007). Meat weight of landed scallops may differ from those predicted based on research survey data because: 1) the shell height/meat weight relationship varies seasonally in part because of the reproductive cycle, causing meats collected during the NEFSC survey to differ from the rest of the year; 2) commercial fishers concentrate on speed while shucking, leaving some meat on the shell (Naidu, 1987; Kirkley and DuPaul, 1989); and 3) fishers may target areas with relatively large meat weight at shell height, thus increasing commercial weights compared to those seen on the research survey vessel (NEFSC, 2007).

#### 4.1.1.1 Assessment

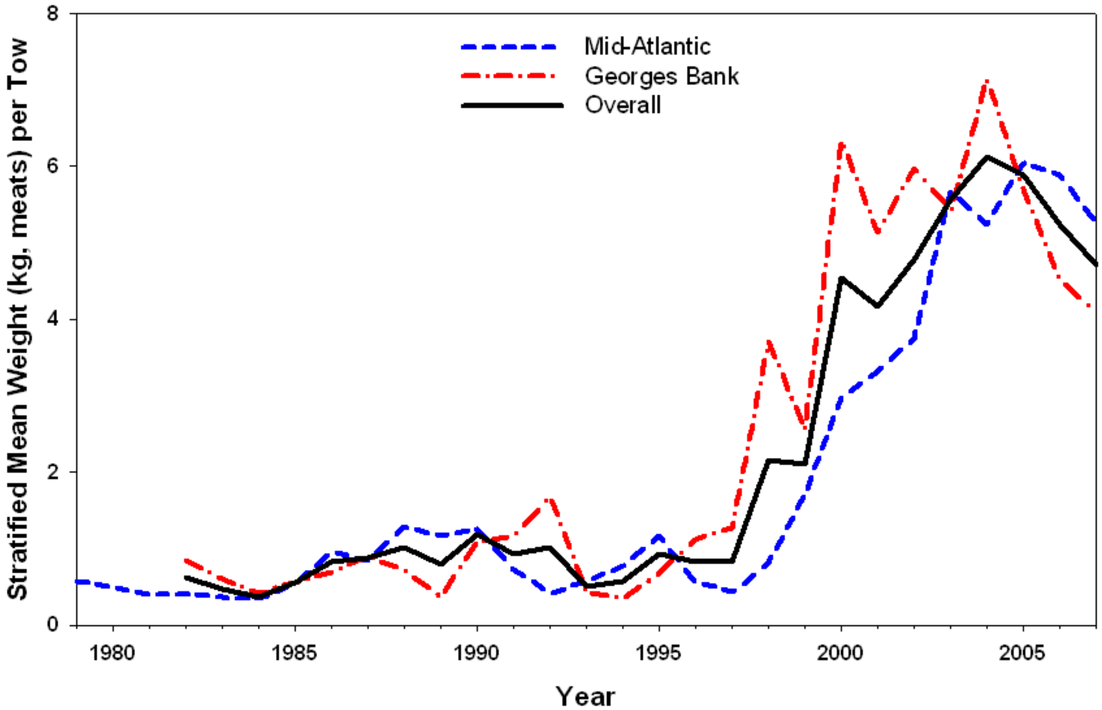
The primary source of data used in the biological component of the scallop assessment currently comes from the federal scallop survey. The scallop dredge survey has been conducted in a consistent manner since 1979. An 8-foot modified scallop dredge is used with 2" rings and a 1.5" liner. Tows are 15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

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

Based on the results of the latest stock assessment workshop (SAW 50, June 2010), $F_{max}$ is highly uncertain in the Mid-Atlantic, and no longer makes sense to use as a proxy. GB is slightly better, but the assessment working group still moved to use MSY. Currently, the stock is above $B_{MSY}$, and well above overfishing threshold of ½ $B_{MSY}$ (not overfished). Combined stock $F$ in 2009 (0.378) is essentially equal to the new $F_{MSY}$ reference point (0.38) estimated from the Stochastic Yield Model (SYM), but it must be over the reference point for overfishing to be occurring. The probability that overfishing was occurring in 2009 was just under 50%, so reduced allocations are expected in 2011 and possibly 2012 compared to 2009. It is also expected that 2010 $F$ will be higher than the 0.24 target.

In general, scallop biomass has increased dramatically in recent years. Figure 15 shows this increase in terms of estimated Mid-Atlantic, Georges Bank and total scallop biomass based on the scallop survey through 2007. These values are unadjusted; therefore cannot be directly compared to biomass thresholds, but the general increasing trend in biomass in both areas is evident.

**Figure 15 - Trend in R/V Albatross stratified mean weight per tow from mid 1980s through 2006 by region.**




#### 4.1.1.2 Stock Status

Stock status has been fluctuating in recent years. Overall biomass increased almost without interruption since 1997, peaking at 8.2 kg/tow in 2004. Fishing mortality was above the old threshold of 0.24 and old target of 0.20 for both 2003 and 2004 with both years at or above 0.30. For 2005, 2006, and 2007, fishing mortality was reduced to 0.22, 0.20, and respectively, staying below the old threshold value. Results from the 2010 stock assessment suggest that *F* has increased again in both 2008 and 2009, as discussed below. This assessment also recommended new stochastic MSY reference points as follows: $F_{msy}$ = 0.38 and $B_{msy}$ = 125,358 mt.

According to the CASA model, total biomass in 2009 was 129,703 mt meats, which is above the estimated $B_{msy}$. Therefore, the sea scallop fishery was not overfished in 2009. The probability the stock was below the 1/2 $B_{MSY}$ biomass threshold is < 0.0001, regardless of which biomass reference point is used.

The estimate of *F* in 2008 for the MA is 0.38 and for GB it is 0.18, with an overall *F* of 0.28. The 2009 *F* in the MA was 0.38 (to three decimal places 0.378), which is above the previous (NEFSC 2007) overfishing threshold of 0.29 and its updated value of 0.30, but equal to the newly recommended (in 2010) $F_{MSY}$ = 0.38. Therefore, overfishing was not occurring in 2009 based on the new recommended overfishing definition.

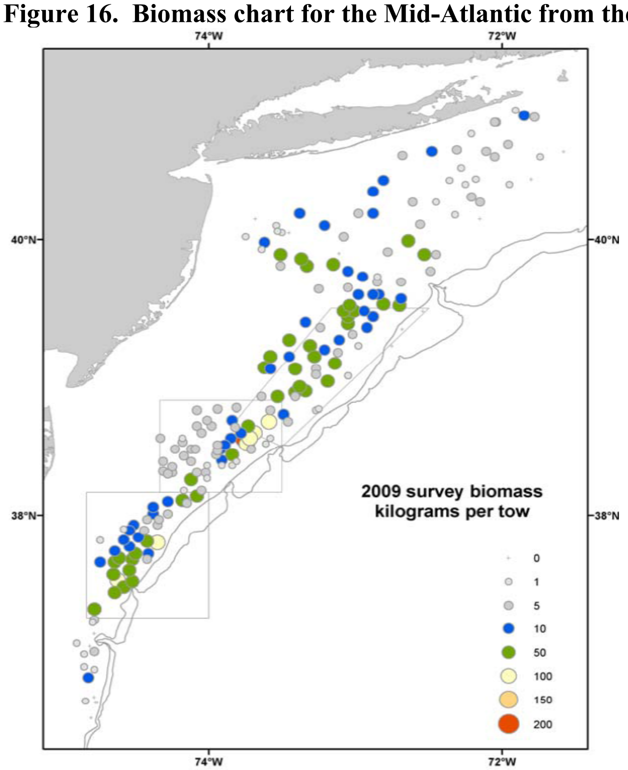
Both estimates of fishing mortality for 2008 and 2009 were substantially higher than the $F_{target}$ of 0.20 from FW19. This is likely due to several factors, most notably an increase in (or underestimation of) LPUE in open areas. While we expect estimates of fishing mortality to be closer to the target in the future, it is notable that we have overshot $F_{target}$ frequently in the past.

### 4.1.1.3 Biomass

Despite a decline in biomass in the past few years, the overall trend shows a considerable increase since 1994, especially in the Georges Bank closed areas (NEFSC, 2007). Scallop biomass on Georges Bank has increased by a factor of 18 and in the Mid-Atlantic Bight by a factor of 8 (Hart and Rago, 2006), which is likely due to very strong recruitment in the Mid-Atlantic and improved management in both the Mid-Atlantic and Georges Bank (NEFMC, 2007). The resource remains in relatively good condition even though mortality was above target for 2003-2004 and 2008-2009 with a greater share of the landings coming from older and larger scallops. Whole-stock estimates indicate that annual abundance, annual egg production, and biomass were relatively high during 2009, with recruitment relatively low.

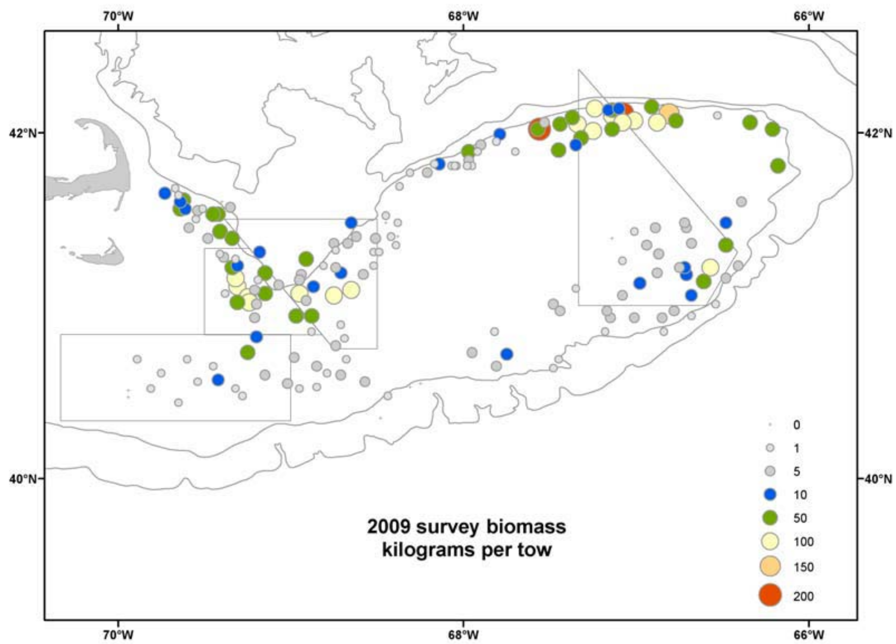
Biomass increased rapidly in the Mid-Atlantic Bight from 1998-2003 due to area closures, reduced fishing mortality, changes in fishery selectivity, and strong recruitment. Biomass in the Hudson Canyon area increased while it was closed from 1998-2001; likewise, biomass increased steadily in the ETA after its closure in 2004. Two very strong year classes were protected by the ETA closure, which contained over one-quarter of the total scallop biomass in 2007. Heavy fishing effort in the area since has decreased biomass. Figure 2 shows the biomass in the Mid Atlantic based on the 2009 NMFS scallop survey. Biomass is distributed fairly evenly throughout the three area closures (Hudson Canyon, Elephant Trunk, Delmarva), with the largest tows confined to ETA and Delmarva.

**Figure 16. Biomass chart for the Mid-Atlantic from the 2009 NMFS sea scallop survey**




The scallop abundance and biomass on Georges Bank increased from 1995-2000 after implementation of closures and effort reduction measures. Biomass and abundance then declined from 2006-2008 because of poor recruitment and the reopening of portions of groundfish closed areas. The 2009 survey estimates an increase in biomass on Georges Bank. The highest concentrations of biomass on Georges Bank are currently on the Northern Edge, within Closed Area I, and within the Nantucket Lightship closed area (Figure 17). A large portion of the biomass is in the South Channel area proposed for closure in Framework 21 (NEFMC 2010).

**Figure 17. Biomass chart for Georges Bank from the 2009 NMFS sea scallop survey**




The sea scallop resource has experienced a change in distribution in recent years. Figure 18 displays scallop biomass in a pie chart by area based on 2007 (left) and 2009 (right) survey data. The ETA (shown in royal blue) contained 32% of the overall biomass in 2007, and now contains 15%. Overall biomass is less concentrated than in past years, with increases elsewhere in the Mid Atlantic and in open areas in both regions. Figure 19 illustrates the reduction in ET biomass from 2006-2009. The largest tows of scallops all but disappeared in 2009, and there has been a reduction in the medium-sized tows as well. This is not surprising since effort levels have been high in this area for several years. However, biomass is lower in ET than previous projections estimated, even with high fishing pressure.

Table 44 gives the estimated total and exploitable biomass by area for 2010 based on projections. ABC is calculated based on the assumption that *F* is spatially uniform, but this is not the case in the scallop fishery. About 40% of the exploitable biomass is currently in rotational closed areas that will not be open in 2010, and therefore the *F* in areas remaining open will be higher than the spatial average over all areas. Amendment 15 will adjust the overfishing definition to be more compatible with area rotation, essentially averaging *F* over time and not space and setting area-specific thresholds based on past *F* and area rotation policies.

**Table 44 - Estimate of total and exploitable scallop biomass by area for 2010**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Biomass (mt) | MA | Hudson Canyon | Virginia Beach | Elephant Trunk | Delmarva | New York Bight | Long Island | | | | |
| | | 18572 | 558 | 19325 | 20042 | 6792 | 11955 | | | | |
| | GB | Closed Area I- No Access | Closed Area I - Access | Closed Area II - No Access | Closed Area 2 - Access | Nantucket Lightship - No Access | Nantucket Lightship - Access | South Channel - Closed | South Channel - Open | Northeast Peak | Southeast Peak |
| | | 13580 | 2782 | 12969 | 12729 | 457 | 8118 | 10308 | 8938 | 2089 | 4173 |
| Exploitable Biomass (mt) | MA | Hudson Canyon | Virginia Beach | Elephant Trunk | Delmarva | New York Bight | Long Island | | | | |
| | | 14179 | 390 | 16292 | 16144 | 5304 | 9161 | | | | |
| | GB | Closed Area I- No Access | Closed Area I - Access | Closed Area II - No Access | Closed Area 2 - Access | Nantucket Lightship - No Access | Nantucket Lightship - Access | South Channel - Closed | South Channel - Open | Northeast Peak | Southeast Peak |
| | | 12091 | 2336 | 11911 | 8409 | 168 | 7550 | 3764 | 3271 | 1509 | 3628 |

**Figure 18 - Distribution of scallop resource by area in 2007 (left) and 2009 (right)**

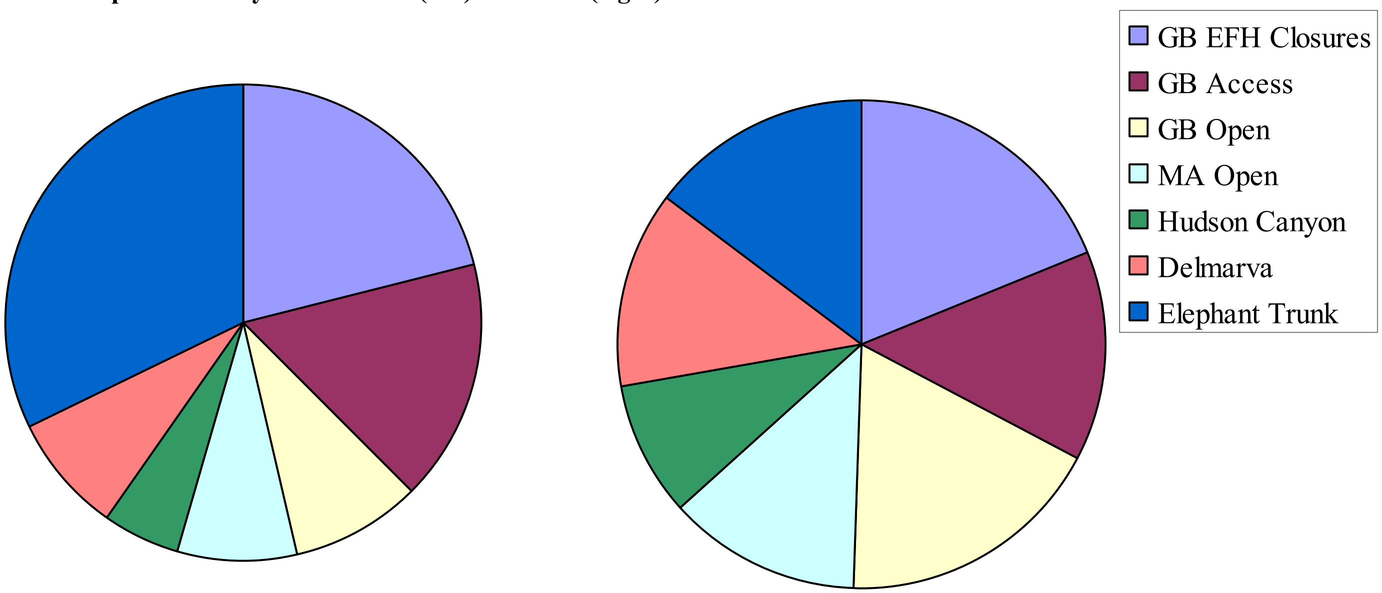
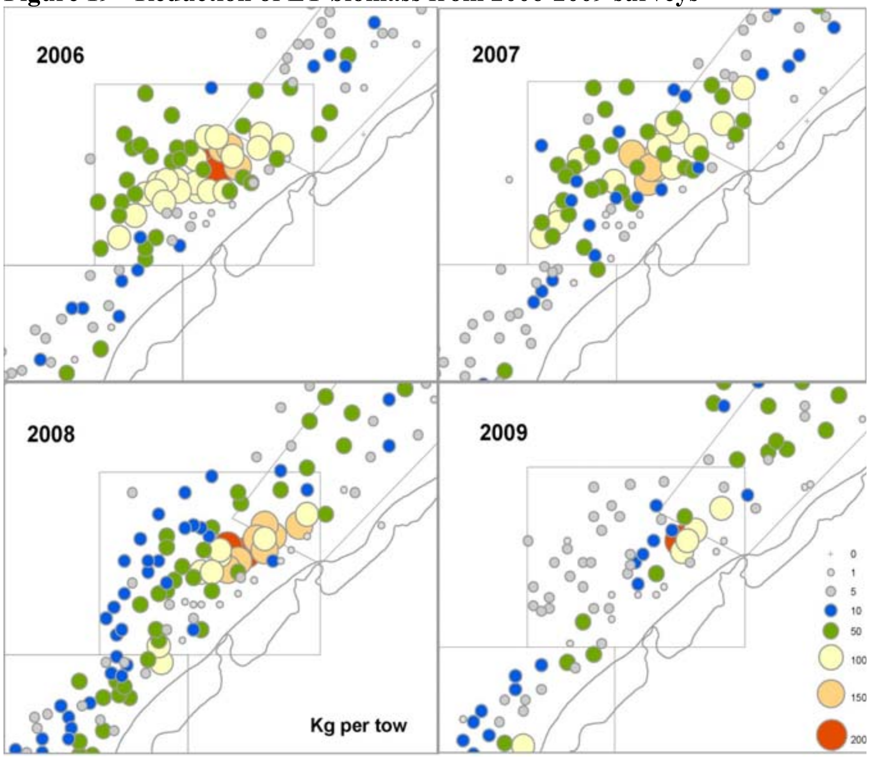


**Figure 19 - Reduction of ET biomass from 2006-2009 surveys**




### 4.1.1.4 Recruitment

Strong recruitment was observed on Georges Bank in 2009, especially in the South Channel, on the Northern Edge, and in the Southeast part of CA II (Figure 20). Several very large tows of recruits were observed in the South Channel area proposed for closure in Framework 21.

Poor recruitment was observed in the Mid-Atlantic, except for some promising tows in the southern portion of the Delmarva area (Figure 21). Looking at trends for both portions of the scallop stock (Figure 22), there is a strong recruitment pattern in place currently for Georges Bank, with three high years in a row. The drop-off in the Mid-Atlantic is somewhat drastic, but not inconsistent with the variable pattern shown by the stock of several strong years followed by a drop-off and recovery.

**Figure 20 - Recruitment on Georges Bank from 2009 NMFS scallop survey**

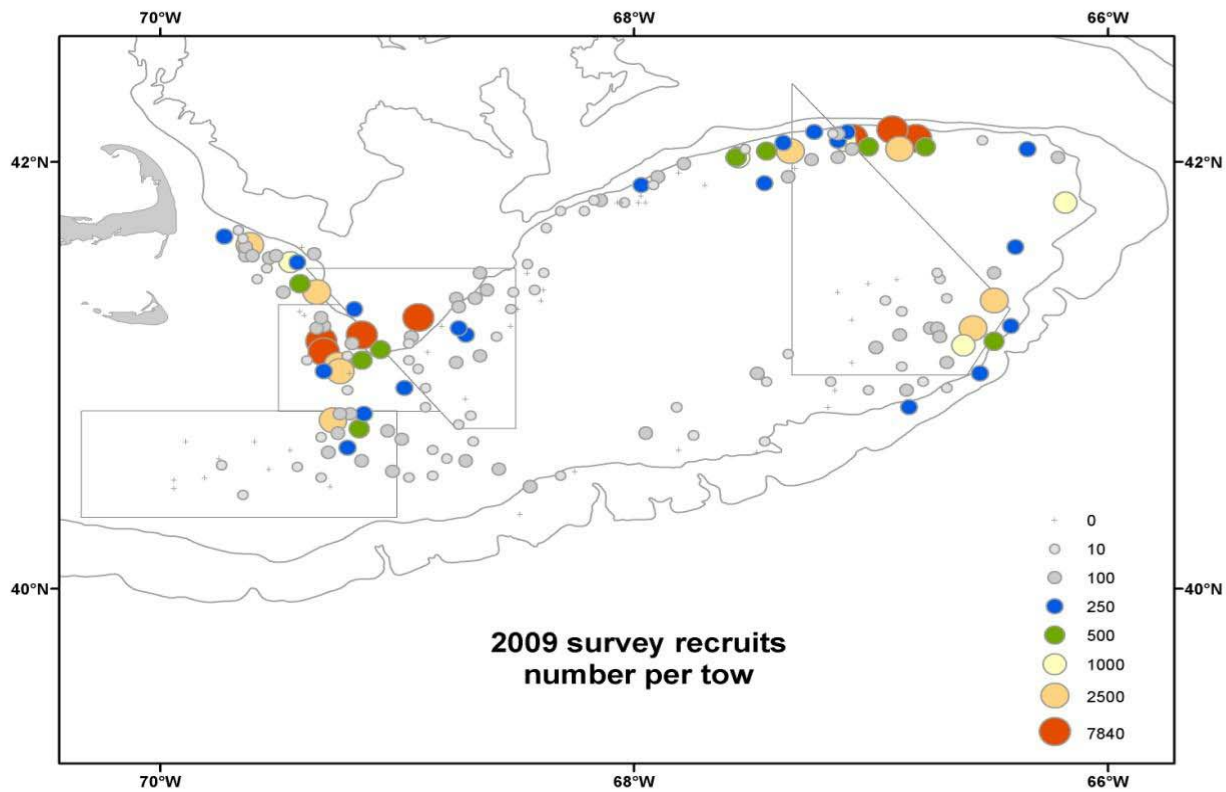


**Figure 21 - Recruitment in the Mid-Atlantic from the 2009 NMFS scallop survey**

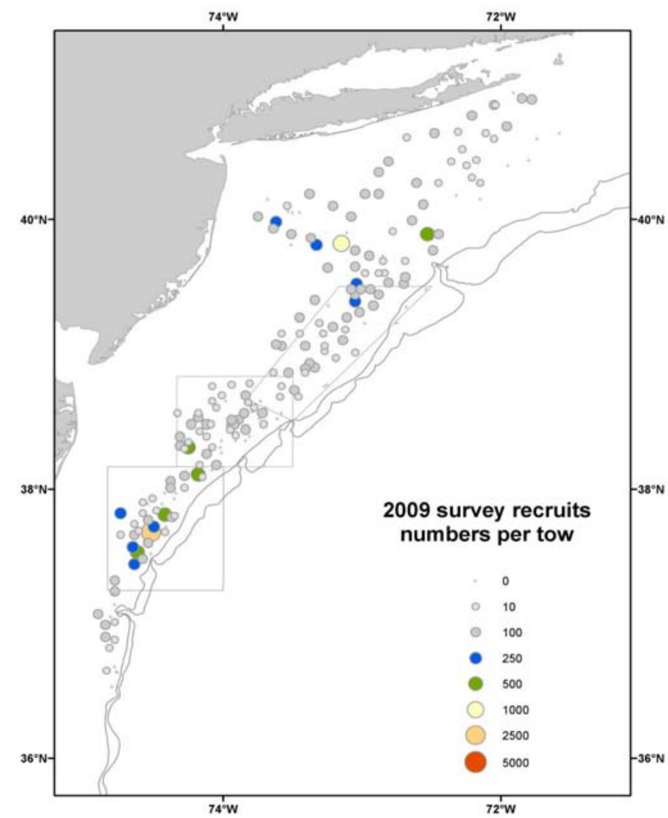
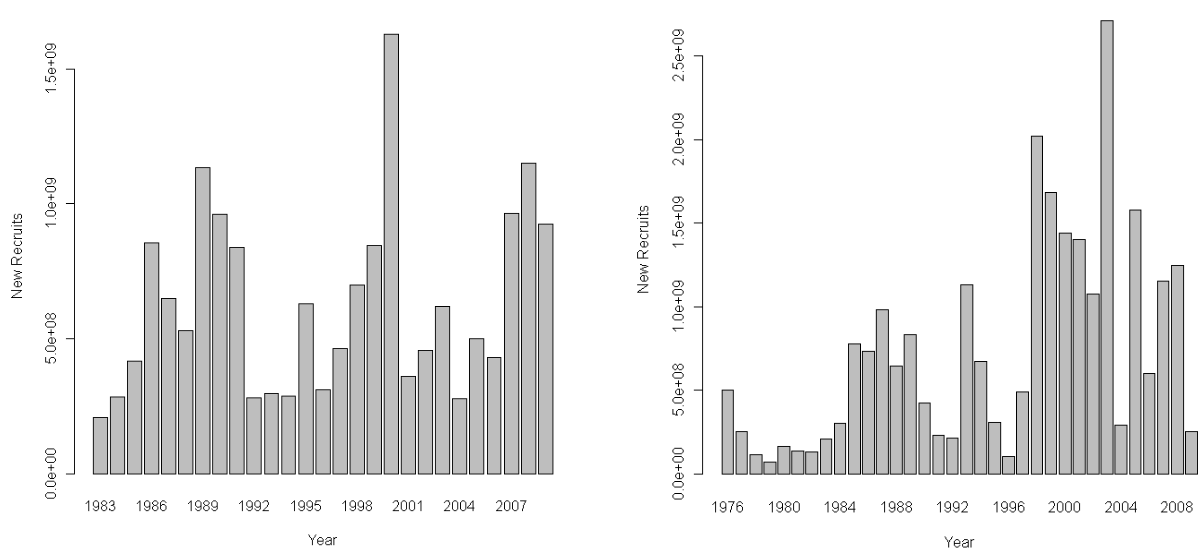



**Figure 22 - Recruitment patterns on Georges Bank (left) and in the Mid-Atlantic (right)**



#### 4.1.1.5 Fishing Mortality

Four types of mortality are accounted for in the assessment: natural, discard, incidental, and fishing mortality. The natural mortality rate was assumed to be $M = 0.1y^{-1}$ for scallops with shell heights greater than 40 mm based on estimates of *M* based on ratios of clappers (still-intact shells from dead scallops) versus live scallops (Merrill and Posgay, 1964). Natural mortality may increase at larger shell heights (MacDonald and Thompson, 1986; NEFSC, 2007).

Discard mortality occurs when scallops are discarded on directed scallop trips because they are too small to be economically profitable to shuck or due to high-grading during access area trips to previously-closed areas. Discard ratios were low during the 2005-2006 season, probably because of new gear regulations (4" rings). Scallops can also be caught as bycatch and either landed or discarded in other fisheries. Trawl fisheries with the largest scallop bycatch for 1994-2006 were longfin squid, summer flounder, yellowtail, haddock, cod, and monkfish. From 1994-2006, an estimated mean of 94 mt meats of scallops were landed and 68 mt meats were discarded per year as bycatch in other fisheries. Total discard mortality is estimated at 20% (NEFSC, 2007).

Incidental mortality is non-landed mortality associated with scallop dredges that likely kill and injure some scallops that are contacted but not caught by crushing their shells. Caddy (1973) estimated 15-20% of the scallops remaining in the dredge track were killed, while Murawski and Serchuk (1989) estimated that <5% were killed. The difference is possibly due to differences in substrate; the first study was done in a hard bottom area, while the subsequent study was in an area with a sandy bottom. Incidental mortality for this assessment was assumed to be 0.15 $F_L$ in Georges Bank and 0.04 $F_L$ in the Mid-Atlantic (NEFSC, 2007).

Fishing mortality, the mortality associated with scallop landings on directed scallop trips, was calculated separately for Georges Bank and the Mid-Atlantic because of differences in growth rates. For comparison to biological reference points used to identify overfishing and overfished stock conditions, a whole-stock estimate of fishing mortality is also necessary. Fishing mortality peaked for both stocks in the early 1990s, but has decreased substantially since then, as tighter regulations were put into place including area closures and biomass levels recovered. In general, *F* has remained stable on Georges Bank since 1995, and the Mid-Atlantic has shown larger fluctuations and an overall higher *F* (Figure 23).

Combined fishing mortality declined steadily from 1991-1998, and has remained relatively steady in the years since (Figure 24). The formal stock status update was prepared through FY2009 as part of SARC 50 (NEFSC, 2010), and the $F_{max}$ reference point was changed to $F_{msy}$ as mentioned earlier. $F_{msy}$ for the whole stock was estimated from the Stochastic Yield Model (SYM) to be 0.38 ($F_{max}$ from SAW 45 was 0.29). SARC 50 estimated that overall fishing mortality in 2009 was 0.38, consistent with recent years. Since the fishing mortality in 2009 was equal to $F_{msy}$, overfishing did not occur (*F* must be above the threshold). Using the "traffic light" approach, fishing mortality for the whole sea scallop stock has a yellow light.

**Figure 23 - Fishing mortality (red line) and biomass estimates ($y^{-1}$, gray bars) from the CASA model for scallops on Georges Bank (right) and in the Mid-Atlantic (left)**

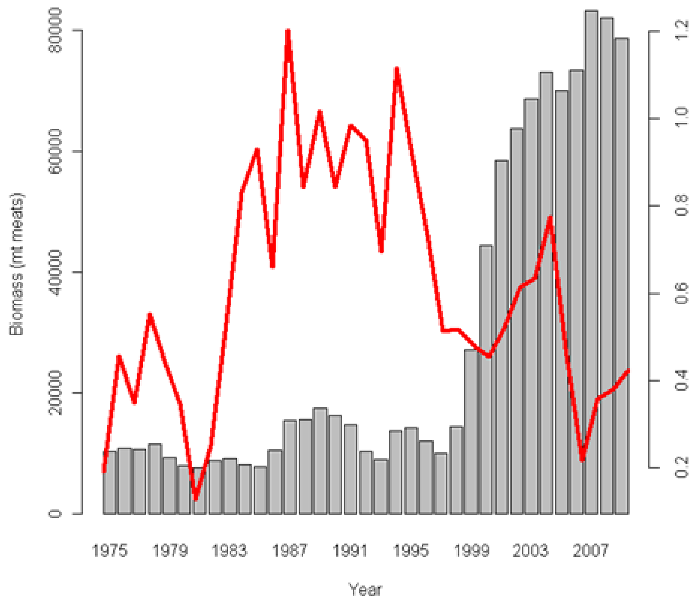
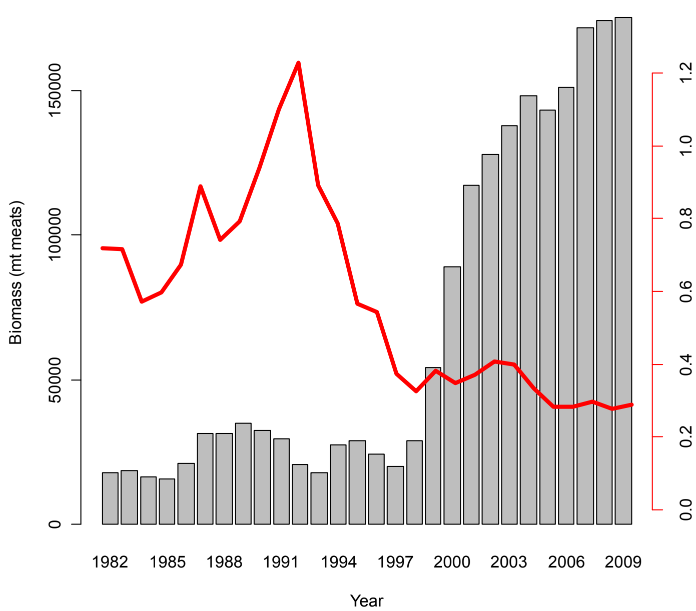



**Figure 24 - Fishing mortality (red line) and biomass estimates ($y^{-1}$, gray bars) from the CASA model for sea scallop resource overall (Georges Bank and Mid-Atlantic combined)**



## 4.2 PHYSICAL ENVIRONMENT AND EFH

The Northeast U.S. Shelf Ecosystem includes 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 to a depth of 2,000 m (Figure 25, Sherman et al. 1996). Four distinct sub-regions are identified: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope. The physical oceanography and biota of these regions were described in the Scallop Amendment 11. Much of this information was extracted from Stevenson et al. (2004), and the reader is referred to this document and sources referenced therein for additional information. These sources included, among others: Abernathy 1989; Backus 1987; Beardsley et al. 1996; Brooks 1996; Cook 1988; Mountain 1994; Reid and Steimle 1988; Schmitz et al. 1987; Sherman et al. 1996; Stumpf and Biggs 1988; Townsend 1992; and Wiebe et al. 1987. Primarily relevant to the scallop fishery are Georges Bank and the Mid-Atlantic Bight, although some fishing also occurs in the Gulf of Maine.

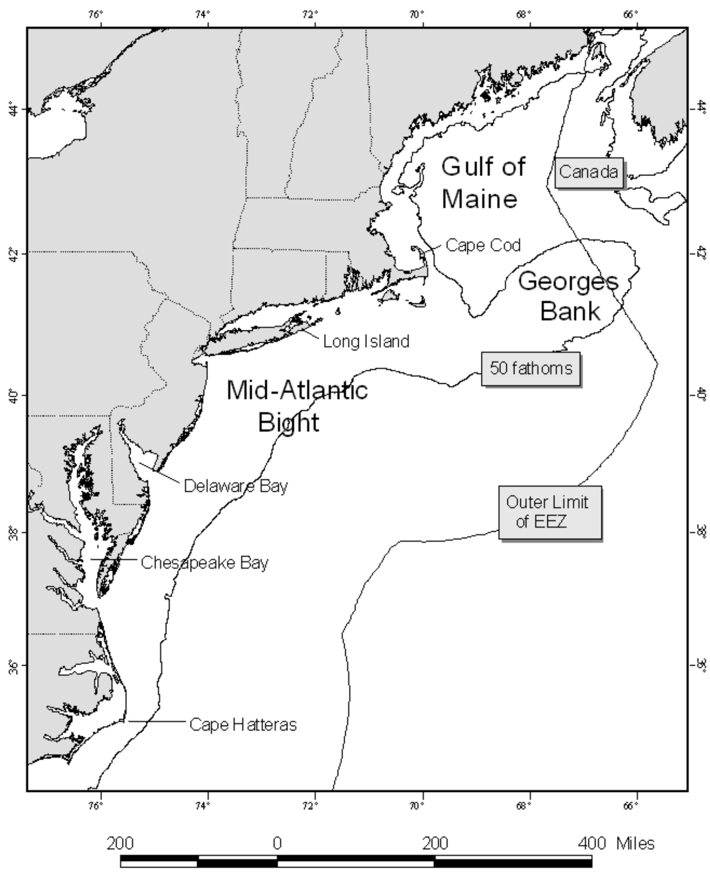



**Figure 25 – Northeast U.S Shelf Ecosystem.**

The Atlantic sea scallop fishery is prosecuted in concentrated areas in and around Georges Bank and off the Mid-Atlantic coast, in waters extending from the near-coast out to the continental shelf (Figure 26). This area, which could potentially be affected by the proposed action, has been identified as EFH for various species (Table 45). Most of the current EFH designations were developed in NEFMC Essential Fish Habitat Omnibus Amendment 1 (1998). Most recently, Amendment 16 to the Northeast Multispecies FMP adds Atlantic wolfish to the management unit and includes an EFH designation for the species. For additional information, the reader is referred to the Omnibus Amendment and the other FMP documents listed in Table 46. In addition, summaries of EFH descriptions and maps for Northeast region species can be accessed at http://www.nero.noaa.gov/hcd/webintro.html. Designations for all species are being reviewed and updated in NEFMC Essential Fish Habitat Omnibus Amendment 2.

**Figure 26 – Geographic extent of the Atlantic sea scallop fishery**

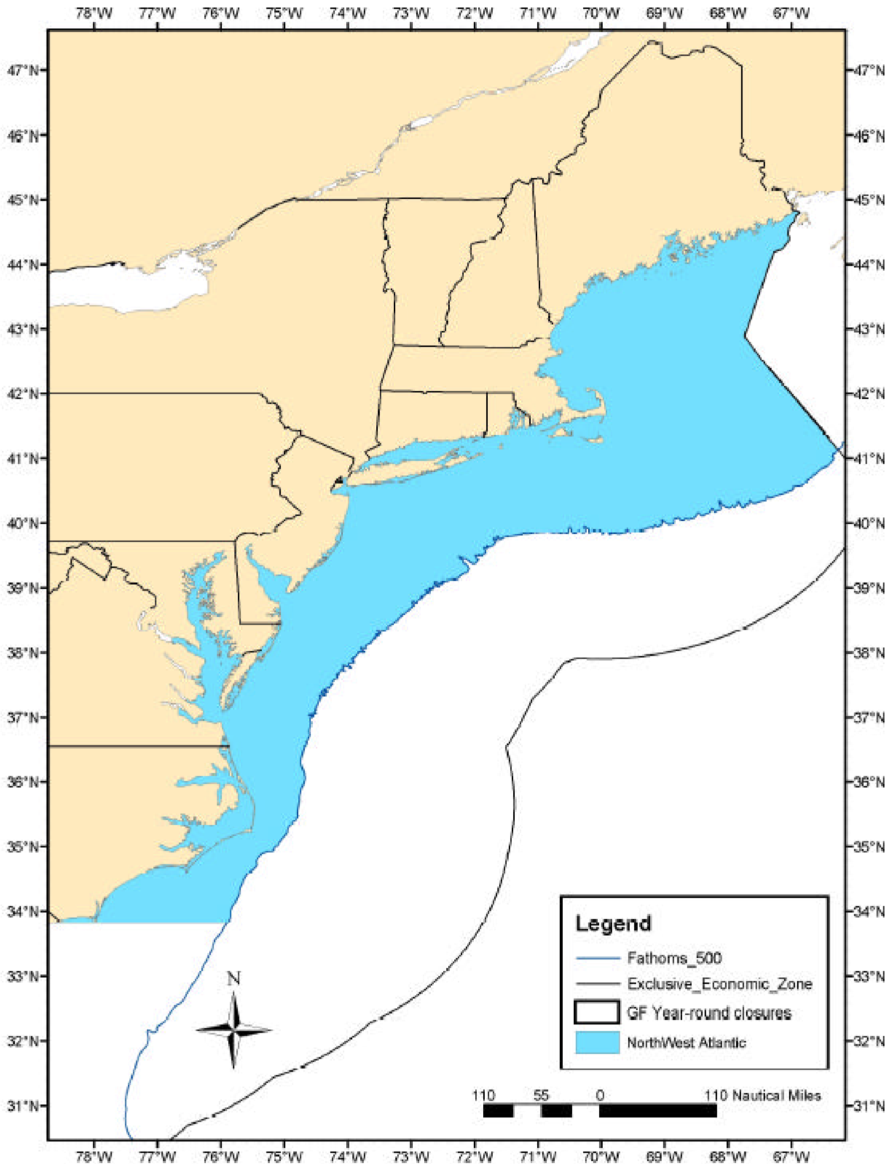


**Table 45 Designated EFH that overlaps with the Atlantic sea scallop fishery, listed by managed species and lifestage.**

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| American plaice | juvenile | GOM and estuaries from Passamaquoddy Bay to Saco Bay, ME and from Mass. Bay to Cape Cod Bay, MA | 45-150 | Bottom habitats with fine grained sediments or a substrate of sand or gravel |
| American plaice | adult | GOM and estuaries from Passamaquoddy Bay to Saco Bay, ME and from Mass. Bay to Cape Cod Bay, MA | 45-175 | Bottom habitats with fine grained sediments or a substrate of sand or gravel |
| Atlantic cod | juvenile | GOM, GB, eastern portion of continental shelf off southern NE and following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay | 25-75 | Bottom habitats with a substrate of cobble or gravel |
| Atlantic cod | adult | GOM, GB, eastern portion of continental shelf off southern NE and following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay | 10-150 | Bottom habitats with a substrate of rocks, pebbles, or gravel |
| Atlantic halibut | juvenile | GOM, GB | 20-60 | Bottom habitats with a substrate of sand, gravel, or clay |
| Atlantic halibut | adult | GOM, Georges Bank | 100-700 | Bottom habitats with a substrate of sand, gravel, or clay |
| Atlantic herring | eggs | GOM, GB and following estuaries: Englishman/Machias Bay, Casco Bay, and Cape Cod Bay | 20-80 | Bottom habitats attached to gravel, sand, cobble or shell fragments, also on macrophytes |
| Atlantic herring | juvenile | GOM, GB and following estuaries: Englishman/Machias Bay, Casco Bay, and Cape Cod Bay | 15-135 | Pelagic waters and bottom habitats |
| Atlantic herring | adult | Pelagic waters and bottom habitats | 20-130 | Pelagic waters and bottom habitats |
| Atlantic sea scallop | eggs | GOM, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay | n/a | Bottom habitats |
| Atlantic sea scallop | larvae | GOM, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay | n/a | Pelagic waters and bottom habitats with a substrate of gravelly sand, shell fragments, pebbles, or on various red algae, hydroids, amphipod tubes, and bryozoans. |
| Atlantic sea scallop | juvenile | GOM, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay | 18-110 | Bottom habitats with a substrate of cobble, shells, and silt |

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| Atlantic sea scallop | adult | GOM, GB, southern NE and middle Atlantic south to Virginia-North Carolina border and following estuaries: Passamaquoddy Bay to Sheepscot R.; Casco Bay, Great Bay, Mass Bay, and Cape Cod Bay | 18-110 | Bottom habitats with a substrate of cobble, shells, coarse/gravelly sand, and sand |
| Atlantic surfclam | juvenile | Eastern edge of GB and the GOM throughout Atlantic EEZ | 0-60, low density beyond 38 | Throughout substrate to a depth of 3 ft within federal waters, burrow in medium to coarse sand and gravel substrates, also found in silty to fine sand, but not in mud |
| Atlantic surfclam | adult | Eastern edge of GB and the GOM throughout Atlantic EEZ | 0-60, low density beyond 38 | Throughout substrate to a depth of 3 ft within federal waters |
| Atlantic wolfish | all life stages | | | |
| Barndoor skate | juvenile | Eastern GOM, GB, Southern NE, Mid-Atlantic Bight to Hudson Canyon | l0-750, mostly <150 | Bottom habitats with mud, gravel, and sand substrates |
| Barndoor skate | adult | Eastern GOM, GB, Southern NE, Mid-Atlantic Bight to Hudson Canyon | l0-750, mostly <150 | Bottom habitats with mud, gravel, and sand substrates |
| Black sea bass | juvenile | Demersal waters over continental shelf from GOM to Cape Hatteras, NC, also includes estuaries from Buzzards Bay to Long Island Sound; Gardiners Bay, Barnegat Bay to Chesapeake Bay; Tangier/ Pocomoke Sound, and James River | 1-38 | Rough bottom, shellfish and eelgrass beds, manmade structures in sand-shell areas, offshore clam beds, and shell patches may be used during wintering |
| Black sea bass | adult | Demersal waters over continental shelf from GOM to Cape Hatteras, NC, also includes estuaries: Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay; Tangier/ Pocomoke Sound, and James River | 20-50 | Structured habitats (natural and manmade), sand and shell substrates preferred |
| Clearnose skate | juvenile | GOM, along shelf to Cape Hatteras, NC; includes the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem | 0–500, mostly <111 | Bottom habitats with substrate of soft bottom along continental shelf and rocky or gravelly bottom |
| Clearnose skate | adult | GOM, along shelf to Cape Hatteras, NC; includes the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem | 0–500, mostly <111 | Bottom habitats with substrate of soft bottom along continental shelf and rocky or gravelly bottom |
| Haddock | juvenile | GB, GOM, middle Atlantic south to Delaware Bay | 35-100 | Bottom habitats with a substrate of pebble and gravel |
| Haddock | adult | GB and eastern side of Nantucket Shoals, throughout GOM, *additional area of Nantucket Shoals, and Great South Channel | 40-150 | Bottom habitats with a substrate of broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches |

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| Little skate | juvenile | GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem | 0-137, mostly 73-91 | Bottom habitats with sandy or gravelly substrate or mud |
| Little skate | adult | GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem | 0-137, mostly 73-91 | Bottom habitats with sandy or gravelly substrate or mud |
| Longfin squid | eggs | GB, southern NE and middle Atlantic to mouth of Chesapeake Bay | <50 | Egg masses attached to rocks, boulders and vegetation on sand or mud bottom |
| Monkfish | juvenile | Outer continental shelf in the middle Atlantic, mid-shelf off southern NE, all areas of GOM | 25-200 | Bottom habitats with substrates of a sandshell mix, algae covered rocks, hard sand, pebbly gravel, or mud |
| Monkfish | adult | Outer continental shelf in the middle Atlantic, mid-shelf off southern NE, outer perimeter of GB, all areas of Gulf of Maine | 25-200 | Bottom habitats with substrates of a sandshell mix, algae covered rocks, hard sand, pebbly gravel, or mud |
| Ocean pout | eggs | GOM, GB, southern NE, and middle Atlantic south to Delaware Bay, and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts and Cape Cod Bay | <50 | Bottom habitats, generally in hard bottom sheltered nests, holes, or crevices |
| Ocean pout | larvae | GOM, GB, southern NE, and middle Atlantic south to Delaware Bay, and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts and Cape Cod Bay | <50 | Bottom habitats in close proximity to hard bottom nesting areas |
| Ocean pout | juvenile | GOM, GB, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, and Cape Cod Bay | <80 | Bottom habitats in close proximity to hard bottom nesting areas |
| Ocean pout | adult | GOM, GB, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay; Mass. Bay, Boston Harbor, and Cape Cod Bay | <110 | Bottom habitats, often smooth bottom near rocks or algae |
| Ocean quahog | juvenile | Eastern edge of GB and GOM throughout the Atlantic EEZ | 8-245 | Throughout substrate to a depth of 3 ft within federal waters, occurs progressively further offshore between Cape Cod and Cape Hatteras |
| Ocean quahog | adult | Eastern edge of GB and GOM throughout the Atlantic EEZ | 8-245 | Throughout substrate to a depth of 3 ft within federal waters, occurs progressively further offshore between Cape Cod and Cape Hatteras |
| Pollock | juvenile | GOM, GB, and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay to Waquoit Bay; Long Island Sound, Great South Bay | 0 – 250 | Bottom habitats with aquatic vegetation or a substrate of sand, mud, or rocks |

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| Pollock | adult | GOM, GB, southern NE, and middle Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., Mass Bay, Cape Cod Bay, Long Island Sound | 15 – 365 | Hard bottom habitats including artificial reefs |
| Red hake | juvenile | GOM, GB, continental shelf off southern NE, and middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay, Mass. Bay to Cape Cod Bay; Buzzards Bay to Conn. R.; Hudson R./ Raritan Bay, and Chesapeake Bay | <100 | Bottom habitats with substrate of shell fragments, including areas with an abundance of live scallops |
| Red hake | adult | GOM, GB, continental shelf off southern NE, and middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Saco Bay; Great Bay, Mass. Bay to Cape Cod Bay; Buzzards Bay to Conn. R.; Hudson R./ Raritan Bay, Delaware Bay, and Chesapeake Bay | 10-130 | Bottom habitats in depressions with a substrate of sand and mud |
| Redfish | juvenile | GOM, southern edge of GB | 25-400 | Bottom habitats with a substrate of silt, mud, or hard bottom |
| Redfish | adult | GOM, southern edge of GB | 50-350 | Bottom habitats with a substrate of silt, mud, or hard bottom |
| Rosette skate | juvenile | Nantucket shoals and southern edge of GB to Cape Hatteras, NC | 33-530, mostly 74-274 | Bottom habitats with soft substrate, including sand/mud bottoms, mud with echinoid and ophiuroid fragments, and shell and pteropod ooze |
| Rosette skate | adult | Nantucket shoals and southern edge of GB to Cape Hatteras, NC | 33-530, mostly 74-274 | Bottom habitats with soft substrate, including sand/mud bottoms, mud with echinoid and ophiuroid fragments, and shell and pteropod ooze |
| Scup | juvenile | Continental shelf from GOM to Cape Hatteras, NC includes the following estuaries: Mass. Bay, Cape Cod Bay to Long Island Sound; Gardiners Bay to Delaware Inland Bays; and Chesapeake Bay | 0-38 | Demersal waters north of Cape Hatteras and inshore on various sands, mud, mussel, and eelgrass bed type substrates |
| Scup | adult | Continental shelf from GOM to Cape Hatteras, NC includes the following estuaries: Cape Cod Bay to Long Island Sound; Gardiners Bay to Hudson R./ Raritan Bay; Delaware Bay and Inland Bays; and Chesapeake Bay | 2-185 | Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types) |
| Silver hake | juvenile | GOM, GB, continental shelf off southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, Mass. Bay to Cape Cod Bay | 20-270 | Bottom habitats of all substrate types |
| Silver hake | adult | GOM, GB, continental shelf off southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, Mass. Bay to Cape Cod Bay | 30-325 | Bottom habitats of all substrate types |

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| Smooth skate | juvenile | Offshore banks of GOM | 31–874, mostly 110-457 | Bottom habitats with a substrate of soft mud (silt and clay), sand, broken shells, gravel and pebbles |
| Smooth skate | adult | Offshore banks of GOM | 31–874, mostly 110-457 | Bottom habitats with a substrate of soft mud (silt and clay), sand, broken shells, gravel and pebbles |
| Summer flounder | juvenile | Over continental shelf from GOM to Cape Hatteras, NC; south of Cape Hatteras to Florida; also includes estuaries from Waquoit Bay to James R.; Albemarle Sound to Indian R. | 0.5–5 in estuary | Demersal waters, on muddy substrate but prefer mostly sand; found in the lower estuaries in flats, channels, salt marsh creeks, and eelgrass beds |
| Summer flounder | adult | Over continental shelf from GOM to Cape Hatteras, NC; south of Cape Hatteras to Florida; also includes estuaries from Buzzards Bay, Narragansett Bay, Conn. R. to James R.; Albemarle Sound to Broad R.; St. Johns R., and Indian R. | 0-25 | Demersal waters and estuaries |
| Thorny skate | juvenile | GOM and Georges Bank | 18-2000, mostly 111 - 366 | Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud |
| Thorny skate | adult | GOM and GB | 18-2000, mostly 111 - 366 | Bottom habitats with a substrate of sand, gravel, broken shell, pebbles, and soft mud |
| Tilefish | juvenile | US/Canadian boundary to VA/NC boundary (shelf break, submarine canyon walls, and flanks: GB to Cape Hatteras) | 76-365 | Rough bottom, small burrows, and sheltered areas; substrate rocky, stiff clay, human debris |
| Tilefish | adult | US/Canadian boundary to VA/NC boundary (shelf break, submarine canyon walls, and flanks: GB to Cape Hatteras) | 76-365 | Rough bottom, small burrows, and sheltered areas; substrate rocky, stiff clay, human debris |
| White hake | juvenile | GOM, southern edge of GB, southern NE to middle Atlantic and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Cape Cod Bay | 5-225 | Pelagic stage - pelagic waters; demersal stage - bottom habitat with seagrass beds or substrate of mud or fine grained sand |
| White hake | adult | GOM, southern edge of GB, southern NE to middle Atlantic and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Cape Cod Bay | 5-325 | Bottom habitats with substrate of mud or fine grained sand |
| Windowpane flounder | juvenile | GOM, GB, southern NE, middle Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Chesapeake Bay | 1-100 | Bottom habitats with substrate of mud or fine grained sand |
| Windowpane flounder | adult | GOM, GB, southern NE, middle Atlantic south to Virginia - NC border and the following estuaries: Passamaquoddy Bay to Great Bay; Mass. Bay to Chesapeake Bay | 1-75 | Bottom habitats with substrate of mud or fine grained sand |

| *Species* | *Life stage* | *Geographic area* | *Depth (m)* | *EFH Description* |
|---|---|---|---|---|
| Winter flounder | eggs | GB, inshore areas of GOM, southern NE, and middle Atlantic south to Delaware Bay | <5 | Bottom habitats with a substrate of sand, muddy sand, mud, and gravel |
| Winter flounder | juvenile | GB, inshore areas of GOM, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Chincoteague Bay | 0.1–10 (1 - 50, age 1+) | Bottom habitats with a substrate of mud or fine grained sand |
| Winter flounder | adult | GB, inshore areas of GOM, southern NE, middle Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Chincoteague Bay | 1-100 | Bottom habitats including estuaries with substrates of mud, sand, grave |
| Winter skate | juvenile | Cape Cod Bay, GB, southern NE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem | 0-371, mostly < 111 | Bottom habitats with substrate of sand and gravel or mud |
| Winter skate | adult | Cape Cod Bay, GB southern NE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem | 0-371, mostly < 111 | Bottom habitats with substrate of sand and gravel or mud |
| Witch flounder | juvenile | GOM, outer continental shelf from GB south to Cape Hatteras | 50-450 to 1500 | Bottom habitats with fine grained substrate |
| Witch flounder | adult | GOM, outer continental shelf from GB south to Chesapeake Bay | 25-300 | Bottom habitats with fine grained substrate |
| Yellowtail flounder | juvenile | GB, GOM, southern NE continental shelf south to Delaware Bay and the following estuaries: Sheepscot R., Casco Bay, Mass. Bay to Cape Cod Bay | 20-50 | Bottom habitats with substrate of sand or sand and mud |
| Yellowtail flounder | adult | GB, GOM, southern NE continental shelf south to Delaware Bay and the following estuaries: Sheepscot R., Casco Bay, Mass. Bay to Cape Cod Bay | 20-50 | Bottom habitats with substrate of sand or sand and mud |

**Table 46 – Listing of sources for original EFH designation information**

| *Species* | *Management authority* | *Plan managed under* | *EFH designation action* |
|---|---|---|---|
| American plaice | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Atlantic cod | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Atlantic halibut | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Atlantic herring | NEFMC | Atlantic Herring | EFH Omnibus/Atlantic Herring FMP |
| Atlantic sea scallop | NEFMC | Atlantic Sea Scallop | EFH Omnibus/Atlantic Sea Scallop A9 |
| Atlantic surfclam | MAFMC | Atlantic Surfclam Ocean Quahog | Atlantic Surfclam Ocean Quahog A12 |
| Barndoor skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Black sea bass | MAFMC | Summer Flounder, Scup, and Black Sea Bass | Summer Flounder, Scup, and Black Sea Bass A12 |
| Clearnose skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Haddock | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |

| *Species* | *Manageme nt authority* | *Plan managed under* | *EFH designation action* |
|---|---|---|---|
| Little skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Longfin squid | MAFMC | Atlantic Mackerel, Squid, and Butterfish | Atlantic Mackerel, Squid, and Butterfish A8 |
| Monkfish | NEFMC, MAFMC | Monkfish | EFH Omnibus/Monkfish A1 |
| Ocean pout | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Ocean quahog | MAFMC | Atlantic Surfclam Ocean Quahog | Atlantic Surfclam Ocean Quahog A12 |
| Pollock | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Red hake | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Redfish | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Rosette skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Scup | MAFMC | Summer Flounder, Scup, and Black Sea Bass | Summer Flounder, Scup, and Black Sea Bass A12 |
| Silver hake | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Smooth skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Summer flounder | MAFMC | Summer Flounder, Scup, and Black Sea Bass | Summer Flounder, Scup, and Black Sea Bass A12 |
| Thorny skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Tilefish | MAFMC | Tilefish | Tilefish FMP |
| White hake | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Windowpane flounder | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Winter flounder | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Winter skate | NEFMC | NE Skate Complex | Original NE Skate Complex FMP |
| Witch flounder | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |
| Yellowtail flounder | NEFMC | NE Multispecies | EFH Omnibus/NE Multispecies A11 |

Among other measures, this action proposes to eliminate the Scallop Amendment 10 EFH closures. The following four maps describe aspects of the seabed environment in those areas, including the dominant substrate and energy regime.

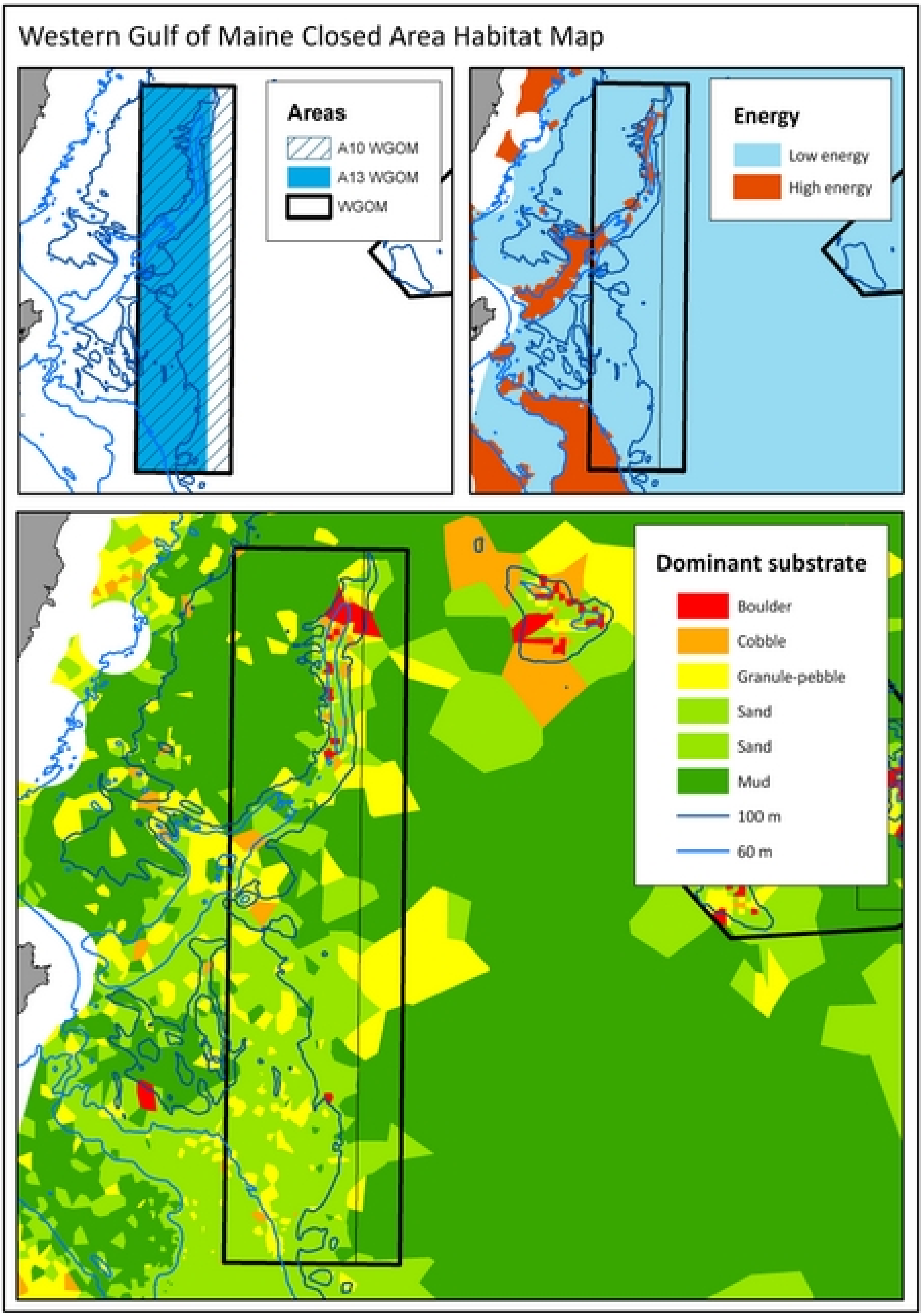



**Figure 27 – Substrate composition and environmental energy in Western Gulf of Maine Closed Area**

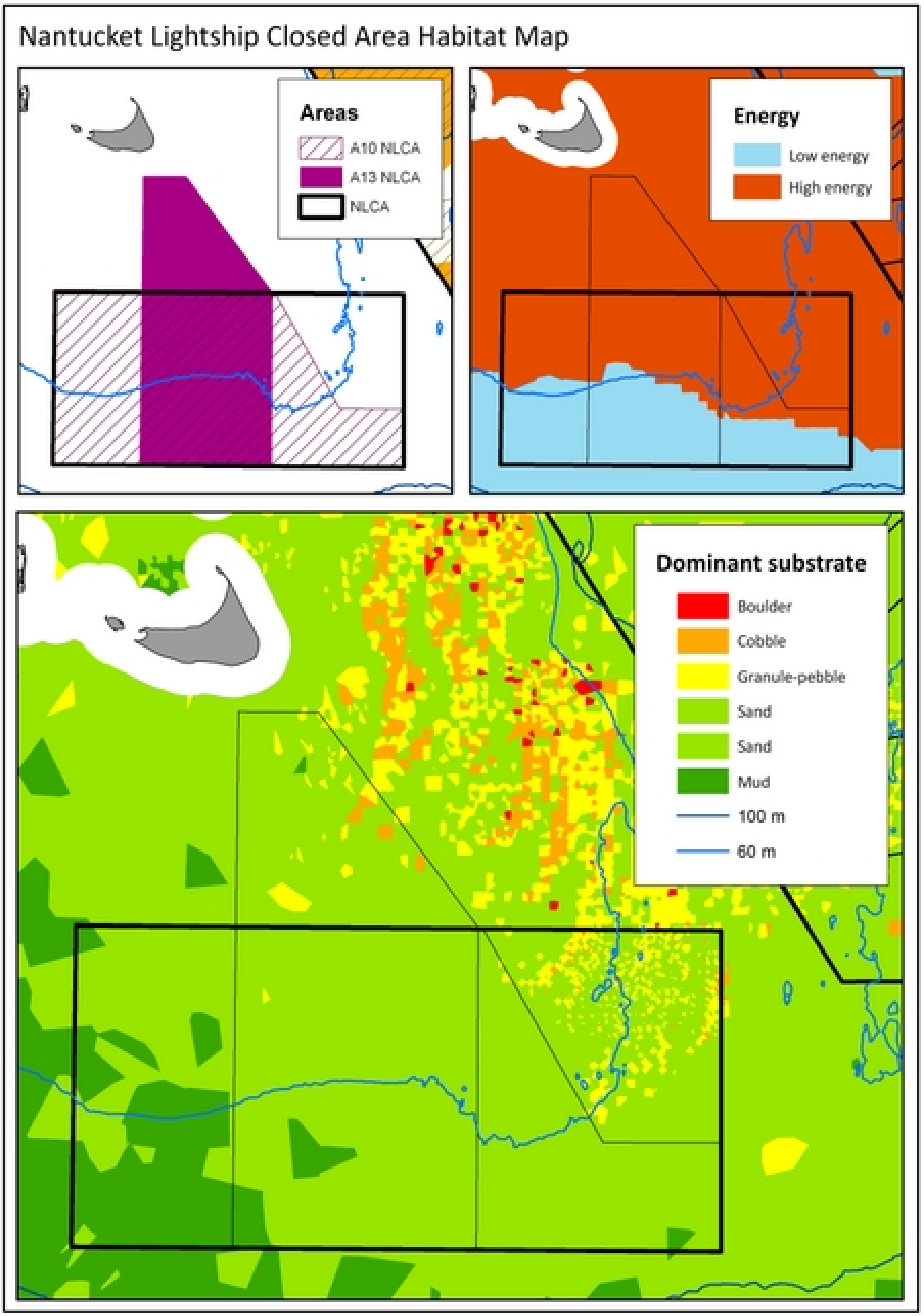



**Figure 28 – Substrate composition and environmental energy in Nantucket Lightship Closed Area**

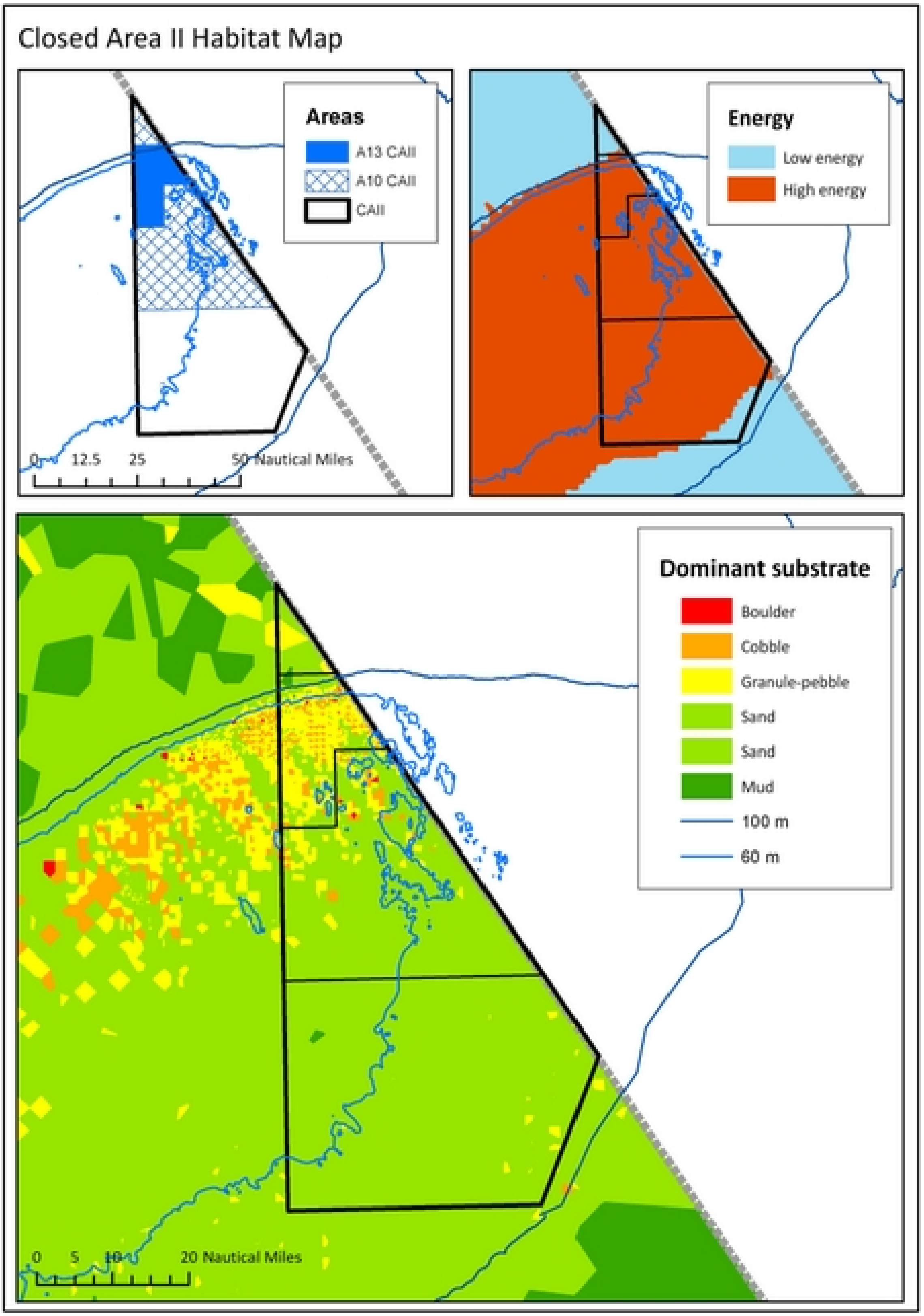



**Figure 29 – Substrate composition and environmental energy in Closed Area II**

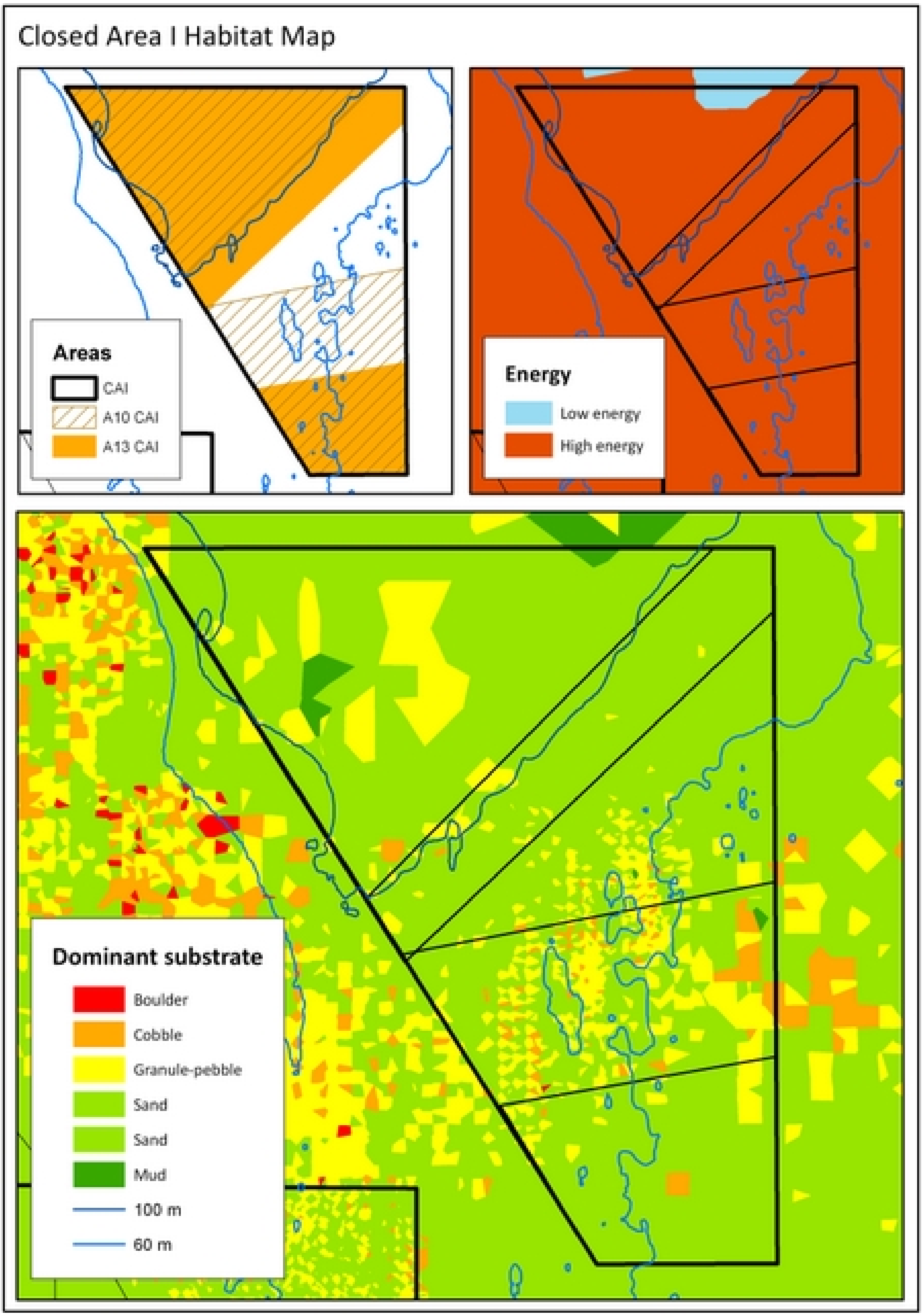



**Figure 30 – Substrate composition and environmental energy in Closed Area I**

## 4.3 PROTECTED RESOURCES

The following protected species are found in the environment in which the sea scallop fishery is prosecuted. A number of them are listed under the Endangered Species Act of 1973 (ESA) as endangered or threatened, while others are identified as protected under the Marine Mammal Protection Act of 1972 (MMPA). Two right whale critical habitat designations also are located within the action area. An update and summary is provided here to facilitate consideration of the species most likely to interact with the scallop fishery relative to the proposed action.

A more complete description of protected resources inhabiting the action area is provided in Amendment 10 to the Sea Scallop FMP (See Amendment 10 to the Atlantic Sea Scallop Fishery Management Plan, Section 7.2.7, Protected Species, for a complete list. An electronic version of the document is available at http://www.nefmc.org/scallops/index.html.).

| ***Cetaceans*** | ***Status*** |
|---|---|
| Northern right whale (*Eubalaena glacialis*) | Endangered |
| Humpback whale (*Megaptera novaeangliae*) | Endangered |
| Fin whale (*Balaenoptera physalus*) | Endangered |
| Blue whale (*Balaenoptera musculus*) | Endangered |
| Sei whale (*Balaenoptera borealis*) | Endangered |
| Sperm whale (*Physeter macrocephalus*) | Endangered |
| Minke whale (*Balaenoptera acutorostrata*) | Protected |
| Beaked whale (*Ziphius* and *Mesoplodon spp.*) | Protected |
| Pilot whale (*Globicephala* spp.) | Protected |
| Spotted and striped dolphin (*Stenella spp.*) | Protected |
| Risso's dolphin (*Grampus griseus*) | Protected |
| White-sided dolphin (*Lagenorhynchus acutus*) | Protected |
| Common dolphin (*Delphinus delphis*) | Protected |
| Bottlenose dolphin: coastal stocks (*Tursiops truncatus*) | Protected |
| Harbor porpoise (*Phocoena phocoena*) | Protected |
| | |
| ***Pinnipeds*** | |
| Harbor seal (*Phoca vitulina*) | Protected |
| Gray seal (*Halichoerus grypus*) | Protected |
| Harp seal (*Phoca groenlandica*) | Protected |
| Hooded seal (*Crystophora cristata*) | Protected |
| | |
| ***Sea Turtles*** | |
| Leatherback sea turtle (*Dermochelys coriacea*) | Endangered |
| Kemp's ridley sea turtle (*Lepidochelys kempii*) | Endangered |
| Green sea turtle (*Chelonia mydas*) | Endangered* |
| Loggerhead sea turtle (*Caretta caretta*) | Threatened |

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

***Fish***

| | |
|---|---|
| Shortnose sturgeon (*Acipenser brevirostrum*) | Endangered |
| Atlantic salmon (*Salmo salar*) | Endangered |

#### 4.3.1.1 Threatened and Endangered Species Not Likely to be Affected by the Alternatives Under Consideration

According to the most recent Biological Opinion (Opinion) provided by NMFS dated 3/14/08 (and amended February 5, 2009), the agency has previously determined that species not likely to be affected by the Scallop Fishery Management Plan or by the operation of the fishery include the shortnose sturgeon, the Gulf of Maine distinct population segment of Atlantic salmon, hawksbill sea turtles, and the following whales: North Atlantic right, humpback, fin, sei, blue, and sperm whales, all of which are listed as endangered species under the ESA. NMFS also concluded that the continued authorization of the sea scallop fishery would not have any adverse impacts on cetacean prey, and that it would not affect the oceanographic conditions that are conducive for calving and nursing of large cetaceans.

**Large Cetaceans (Baleen Whales and Sperm Whale)**

The western North Atlantic baleen whale species (North Atlantic right, humpback, fin, sei, and minke) follow a general annual pattern of migration from high latitude summer foraging grounds, including the 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. 2006). Studies of some of the large baleen whales (right, humpback, and fin) have demonstrated the presence of each species in higher latitude waters even in the winter (Swingle et al. 1993; Wiley et al. 1995; Perry et al. 1999; Brown et al. 2002).

In comparison to the baleen whales, sperm whale distribution occurs more on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring et al. 2006). However, sperm whale 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).

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

For North Atlantic right whales, the available information from the most recent stock assessment suggests that the population increased at a rate of 1.8 percent per year from 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), with 1.4 of these resulting from fishery interactions. Recent mortalities included six female right whales, including three that were pregnant at the time of death (Waring et al. 2009).

Based on the stock assessment data available, 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.

For the North Atlantic population of humpback whales, the most recent stock assessment resulted in a population estimate of 11,570, although this number is considered to be negatively biased (Waring, et. al, 2009). Information from the stock assessment indicates an upward trend in abundance for the Gulf of Maine population, but is inconclusive about the North Atlantic population as a whole. 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 Atlantic Large Whale Take Reduction Plan (ALWTRP) was recently revised with publication of a new final rule (72 FR 57104, October 5, 2007) that is intended to continue to address entanglement of large whales (right, humpback, fin, and minke) in commercial fishing gear and to reduce the risk of death and serious injury from entanglements that do occur.

**Small Cetaceans (Dolphins, Harbor Porpoise and Pilot Whale)**
Numerous small cetacean species (dolphins, pilot whales, 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*. (2008).

**Pinnipeds**
Of the four species of seals expected to occur in the area, harbor seals have the most extensive distribution with sightings occurring as far south as 30° N (Katona *et al*. 1993). Grey seals are the second most common seal species in U.S. EEZ waters, occurring primarily in New England (Katona *et al*. 1993; Waring *et al*. 2006). Pupping colonies for both species are also present in New England, although the majority of pupping occurs in Canada. Harp and hooded seals are less commonly observed in U.S. EEZ waters. Both species form aggregations for pupping and breeding off of eastern Canada in the late winter/early spring, and then travel to more northern latitudes for molting and summer feeding (Waring *et al*. 2006). However, individuals of both species are also known to travel south into U.S. EEZ waters and sightings as well as strandings of each species have been recorded for both New England and Mid-Atlantic waters (Waring *et al*. 2006).

#### 4.3.1.2 Threatened and Endangered Species Potentially Affected Adversely by the Alternatives Under Consideration

In the 2008 biological opinion completed for the Atlantic Sea Scallop FMP, NMFS determined that the action being considered in the Opinion may adversely affect the following ESA-listed sea turtle species: loggerhead, leatherback, Kemp's ridley, and green sea turtles. Loggerheads are the most commonly observed taken species of sea turtle in the scallop fishery, thus most information herein pertains to loggerheads.

#### 4.3.1.3 Sea Turtle Background

Loggerhead, leatherback, Kemp's ridley, and green sea turtles occur seasonally in southern New England and Mid-Atlantic continental shelf waters north of Cape Hatteras. In general, turtles move up the coast from southern wintering areas as water temperatures warm in the spring (James *et al*. 2005; Morreale and Standora 2005; Braun-McNeill and Epperly 2004; Morreale and Standora 1998; Musick and Limpus 1997; Shoop and Kenney 1992; Keinath *et al.* 1987). The trend is reversed in the fall as water temperatures cool. By December, turtles have passed Cape Hatteras, returning to more southern waters for the winter (James *et al*. 2005; Morreale and Standora 2005; Braun-McNeill and Epperly 2004; Morreale and Standora 1998; Musick and Limpus 1997; Shoop and Kenney 1992; Keinath *et al.* 1987). Hard-shelled species are typically observed as far north as Cape Cod whereas the more cold-tolerant leatherbacks are observed in more northern 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 long-lived species and reach sexual maturity relatively late (NMFS SEFSC 2001; NMFS and USFWS 2007a; 2007b; 2007c; 2007d, 2008). Sea turtles are injured and killed by numerous human activities (NRC 1990; NMFS and USFWS 2007a; 2007b; 2007c; 2007d; NMFS and USFWS 2008, NMFS NERO 2008). For example, in the 2008 loggerhead recovery plan (NMFS and USFWS 2008), the highest priority threats to the species were noted as bottom trawl, pelagic and demersal longline, and demersal large mesh gillnet fisheries; legal and illegal harvest; vessel strikes; beach armoring and erosion; marine debris ingestion; oil and light pollution; and predation by native and exotic species.

*Loggerhead turtles*

Loggerheads are found in temperate and subtropical waters and are the most common species of sea turtles in U.S. waters. The majority of nesting in US waters occurs on beaches of the southeastern U.S. (especially Florida). Waters as far north as 41-42$^{o}$ N (Figure 1) are used for foraging, with common occurrences of the species from Florida through Cape Cod, MA.

A final revised recovery plan for loggerhead sea turtles in the Northwest Atlantic was recently published by NMFS and FWS in December 2008. The revised recovery plan is significant in that it identifies five unique recovery units, which comprise the population of loggerheads in the Northwest Atlantic, and describes specific recovery criteria for each recovery unit. The five recovery units (RU) representing nesting assemblages are: (1) the Northern Recovery Unit (Florida/Georgia border through southern Virginia), (2) the Peninsular Florida Recovery Unit (Florida/Georgia border through Pinellas County, Florida), (3) the Dry Tortugas Recovery Unit (islands located west of Key West, Florida), (4) the Northern Gulf of Mexico Recovery Unit (Franklin County, Florida through Texas), and (5) the Greater Caribbean Recovery Unit (Mexico through French Guiana, Bahamas, Lesser Antilles, and Greater Antilles).

The Recovery Team evaluated the status and trends of the Northwest Atlantic loggerhead population for each of the five recovery units, using nesting data available as of October 2008 (NMFS and USFWS 2008). Nest count data are a valuable source of information for each turtle species since the number of nests laid reflects the reproductive output of the nesting group each year. Based on the most recent information, a decline in annual nest counts has been measured or suggested for three of the five recovery units for loggerheads in the Northwest Atlantic. This includes Peninsular Florida RU, which is the largest (in terms of number of nests laid) in the Atlantic Ocean. The nesting trends for the other two recovery units could not be determined due to an absence of long term data. Further, recent analysis of available data for the Peninsular Florida RU has led to the conclusion that the observed decline in nesting for that unit over the last several years can best be explained by an actual decline in the number of adult female loggerheads in the population (Witherington et al. 2009).

While some long term in-water population studies have shown an increase in loggerhead abundance (Pamlico Sound, NC; St. Lucie Nuclear Power Plant, FL), other areas have shown no trend (Indian River Lagoon, FL; Florida Bay, FL) or declining abundance (New York inshore waters; Virginia Chesapeake Bay) (NMFS and USFWS 2008, TEWG 2009).

NMFS convened a new Loggerhead Turtle Expert Working Group (TEWG) to review all available information on Atlantic loggerheads in order to evaluate the status of this species in the Atlantic (TEWG 2009). In this report, the TEWG indicated that it could not determine whether or not the decreasing annual numbers of nests among the Northwest Atlantic loggerhead subpopulations were due to stochastic processes resulting in fewer nests, a decreasing average reproductive output of adult females, decreasing numbers of adult females, or a combination of these factors. Many factors are responsible for past or present loggerhead mortality that could impact current nest numbers; however, no single mortality factor stands out as a likely primary factor.

Currently, there are no population estimates for loggerhead sea turtles in any of the ocean basins in which they occur. However, NMFS SEFSC recently developed a stage/age demographic model to help determine the estimated impacts of mortality reductions on loggerhead sea turtle population dynamics (NMFS SEFSC 2009). One of the results of this model was an estimate of the minimum adult female population size for the western North Atlantic over the period 2004-2008. NMFS SEFSC (2009) estimated the minimum adult female population size to be likely between approximately 20,000 to 40,000 individuals, with a large range of uncertainty in total population size.

A status review for the loggerhead sea turtle was completed by the Biological Review Team (BRT) and submitted to NMFS and FWS in August 2009. In this status review, the BRT evaluated the best available data, determined whether population segments exist, and assessed the extinction risk for each potential Distinct Population Segments (DPS). Nine DPSs were identified, consisting of the North Pacific Ocean, South Pacific Ocean, North Indian Ocean, Southeast Indo-Pacific Ocean, Southwest Indian Ocean, Northwest Atlantic Ocean, Northeast Atlantic Ocean, Mediterranean, and South Atlantic Ocean DPSs. Overall, the BRT concluded that the Northeast Atlantic and Mediterranean DPSs are at immediate risk of extinction; the North Pacific, South Pacific, North Indian, Southeast Indo-Pacific, and Northwest Atlantic DPSs are currently at risk of extinction; and the Southwest Indian and South Atlantic DPSs are likely not currently at immediate risk of extinction. Note that the Northwest Atlantic Ocean DPS is the relevant DPS for the Atlantic sea scallop fishery, with the DPS delineated by 60° N latitude and the equator as the north-south boundaries and 40° W longitude as the east boundary.

NMFS and FWS reviewed the BRT report and the best scientific and commercial data available regarding the past, present and future threats faced by the nine DPSs. On March 16, 2010, the agencies issued a proposed rule that determined the nine DPS qualify as "species" for listing under the ESA and proposed the listing of two DPS as threatened and seven as endangered (including the Northwest Atlantic Ocean DPS). Comments on this proposed rule are due on September 13, 2010. After that time, the agencies will review the comments and prepare a final determination, which may or may not be what was proposed. Typically a listing action becomes effective 30 days after publication of the final rule in the Federal Register. Only after that final listing decision is announced in the Federal Register would DPSs be applied, if deemed necessary and warranted, and a new listing be in effect. Critical habitat will be proposed for the two DPSs occurring within the U.S. (Northwest Atlantic Ocean and North Pacific Ocean DPSs), if found to be prudent and determinable, in a separate rulemaking.

A new listing decision for loggerhead sea turtles would likely warrant reinitiation of section 7 consultation on the Atlantic sea scallop fishery, but that would not happen until after a final determination was issued. The status review or proposed rule do not impact anything the Council and NMFS need to do for FW22.

*Leatherback, Kemp's ridley and green turtles*
Leatherback sea turtles have a high tolerance to relatively low water temperatures, which allows them to be widely distributed throughout the world's oceans. Leatherbacks seem to be most vulnerable to entanglement in fishing gear, including bottom otter trawls. Nest counts for leatherback sea turtles as well as Kemp's ridley and green sea turtles in the Atlantic demonstrate increased nesting by these species (NMFS and USFWS 2007b; 2007c; 2007d). The leatherback TEWG evaluated nesting data and considered the $5^{th}$ and $95^{th}$ percentiles across individual subpopulations to estimate a population of 34,000-94,000 adult leatherbacks in the North Atlantic (TEWG 2007).

Kemp's ridley are primarily found in neashore waters of 37m or less, although it is not uncommon for adults to be found farther from shore in deeper waters (Byles 1989, Mysing and Vanselous 1989, Renaud et al.1996, Shaver et al. 2005b, Shaver and Wibbels 2007, Shaver and Rubino 2008). Key habitats for young Kemps ridleys have been studied in the vicinities of Pamlico Sound, NC, Chesapeake Bay, VA, and Long Island Sound, NY. Other foraging areas likely include Charleston Harbor, SC, and Delaware Bay, NJ.

Green sea turtles have a circumglobal distribution, ranging from the mid-Atlantic to Argentina and occurring seasonally in mid-Atlantic and New England waters. Of the 23 nesting groups assessed in the NMFS and USFWS (2007) report, 10 were considered increasing, 9 were considered stable, and 4 were considered decreasing. Fishery mortality accounts for a large proportion of annual anthropogenic mortality outside of the nesting beaches.

#### 4.3.1.4 Impacts on Sea Turtles – 2008 Biological Opinion

On February 23, 2007, the NEFSC released NEFSC Reference Document 07-04 (Murray 2007). Based on observer data for the scallop trawl fishery for 2004 and 2005, Murray (2007) provided the first estimates of the average annual bycatch of loggerhead sea turtles in scallop trawl gear. NMFS NERO determined that the reference document presented new information regarding the capture of sea turtles in scallop trawl gear that reveals effects of the action that may affect listed sea turtles in a manner or to an extent not previously considered. Therefore, in accordance with the regulations at 50 CFR 402.16, formal consultation was reinitiated on April 3, 2007, to reconsider the effects of the Atlantic sea scallop fishery on ESA-listed sea turtles. Consultation was completed on March 14, 2008.

The 2008 Biological Opinion identified four endangered or threatened sea turtle species that may be adversely affected by the Scallop FMP and the fishery: loggerhead, leatherback, Kemp's ridley and green sea turtles, but concluded that the fishery was not likely to jeopardize their continued existence. Summary information is provided here that broadly describes the general distribution of sea turtles within the scallop action area, as well as the known interactions with sea scallop gear.

Additional background information on the relevant sea turtle species can be found in a number of published documents. These include sea turtle status reviews and biological reports (NMFS and USFWS 1995; NMFS and USFWS 2009; Hirth 1997; USFWS 1997; Marine Turtle Expert Working Group (TEWG) 1998, 2000, & 2009; NMFS and USFWS 2007a, b, c, d; Murray 2007; Leatherback TEWG 2007; Haas et al. 2008; Murray 2008; Merrick and Haas 2008), and recovery plans for Endangered Species Act-listed sea turtles (NMFS 1991; NMFS and USFWS 1991a; NMFS and USFWS 1991b; NMFS and USFWS 1992; NMFS and USFWS 1998; USFWS and NMFS 1992; NMFS and NMFS 2005; NMFS and USFWS 2008).

Results from a study done by Merrick and Haas (2008) suggest that mortalities of loggerhead sea turtles in the Atlantic sea scallop dredge and trawl fisheries are detectable, but have a relatively small effect on the trajectory of the adult female components of the western North Atlantic loggerhead sea turtle population over the next 100 years. The 1989-2005 population trends, with and without mortalities, were not significantly different and the probability of reaching the quasi-extinction threshold (250 adult females) under both scenarios was 0.01. Median times to extinction for both were greater than 200 years. This lack of impact occurred regardless of the use of values that generated the greatest consequence of the sea scallop fisheries takes of loggerheads. Comparing the effect of different background mortalities on population trajectories suggests that the relatively steep declining trend in population from 1996-2005 is being driven by some other larger source of mortality (Merrick and Haas 2008).

**Estimated Sea Turtle Takes**

The 2008 biological opinion anticipated that up to 929 loggerheads will be captured biennially in the scallop dredge fishery, of which 595 are anticipated to be lethal. The 2008 Biological opinion also estimated that annually in the scallop dredge fishery there will be takes of 1 leatherback, 1 Kemp's ridley, and 1 green sea turtle (all of which may be lethal or non-lethal). The 2008 Biological opinion estimate of annual takes for the scallop trawl fishery is 154 loggerheads (20 lethal), 1 leatherback, 1 Kemp's ridley, and 1 green sea turtle (all of which may be lethal or non-lethal).

Sea turtles are known to be captured in scallop dredge and trawl gear, gear types that are used in the fisheries affected by this action. As the Loggerhead Recovery Plan (NMFS and USFWS 2008) discussed, loggerheads can be struck and injured or killed by scallop dredge frames or captured in the bag where they may drown or be further injured or killed when catch and heavy gear are dumped on deck. The most commonly described interaction is that of an injured juvenile loggerhead turtle caught in a dredge and brought aboard a vessel (Haas et al. 2008). The total estimated bycatch of loggerhead turtles in the scallop dredge fishery in the mid-Atlantic for

2003 was 749 turtles (Murray 2004), in 2004 was 180 turtles (Murray 2005), and 2005 was 0 turtles (Murray 2007). (It should be noted that three off-watch takes were reported in 2005, and the actual number of takes in the fishery for that year is assumed to be greater than zero.) Changes over the 3 years include implementation of rotational closed areas, and voluntary use of chain mats that prevent turtles (live and/or killed or injured by the dredge) from entering the bag and being observed (also referred to as "turtle chains"). The majority of loggerheads captured in the scallop dredge and trawl fisheries were likely derived from the south Florida nesting populations with relatively small representation from each of the other potential source populations (Haas et al. 2008).

Factors affecting estimated bycatch rates of loggerhead turtles, the species with the greatest number of interactions in scallop trawl and dredge gear in the Mid-Atlantic, vary from year to year (Murray 2004, 2005, 2007). All of the bycatch has occurred between June and October in the Mid-Atlantic. Bycatch analyses to date have not identified a shorter, more specific window of time and area where the greatest probability of turtle bycatch occurs in any given year.

The 2008 Biological opinion summarizes most of the information available to date concerning sea turtle interactions with scallop gear, including research on factors affecting estimated bycatch rates in the dredge fishery. The Biological opinion states that there were 91 observed sea turtle takes in scallop dredge gear from1996 to 2008. Of these, 9 were decomposed so could have died prior to capture. Of the remaining 82, 57 were identified as loggerheads, one as green, two as Kemp's ridley, and 22 were unidentified. Six were fresh dead, 34 were injured, 22 were uninjured, and 18 were alive but their condition was unknown. One primary issue is that being caught in the gear likely results in a higher level of mortality than evidenced due to submergence and contact injuries. Submergence injuries are classified as an absence or reduction in breathing and consciousness with no other apparent injuries; mortality is strongly dependent on tow time. Tows of less than 10 minutes likely achieve <1% mortality rate, which is considered negligible, and a rapid escalation in mortality rate does not occur until after 50 minutes of tow time (Sasso and Epperly 2006). This data is for trawl gear, but NMFS assumes the same is true for dredge gear. Because scallop dredge tows are generally less than or equal to 1 hour, this should help reduce the risk of death from forced submergence. Contact injuries are classified as including scrapes or cuts to soft tissues, cracks to the carapace and/or plastron, missing or damaged scutes, and/or bleeding from one or more orifice.

Chain mats do not decrease the number of turtles that come in contact with the gear; rather they decrease the likelihood that turtles will suffer serious injuries from being caught in the dredge bag. However, since NMFS cannot quantify the decrease in the mortality rate, they adhered to the 64% mortality rate that was in effect prior to chain mat implementation. This mortality rate was based on NMFS working guidance for serious injury determinations for sea turtles caught in scallop dredge gear and the analysis of observed scallop dredge takes in 2003. A 64% mortality rate assigned to the estimated 929 biennial loggerhead takes estimates that 595 of those takes will be lethal. The Biological opinion further stated that any Kemp's ridley and green sea turtle will be killed by the dredge fishery upon interaction; however, leatherback turtle takes are unlikely to be lethal because the interactions are more likely to happen in the water column, and because they are not likely to get caught in a dredge with a chain mat due to their size (both of which are not true for Kemp's and greens).

From 2004-2007, there were 16 observed takes in scallop trawl gear reported in the 2008 Biological opinion. All were captured in the net. One was dead before the tow and was decomposing. Of the non-decomposed turtles, 14 were loggerheads and one was unidentified. Twelve of the 14 turtles examined on board were alive with no apparent injuries. These takes were observed from June through September. An estimated 154 loggerheads were captured in trawl gear from 2004-2005, which is the best available information about the annual takes of loggerheads from the scallop trawl fishery. There were no observed leatherback, Kemp's ridley, or green sea turtle takes in scallop trawl gear. NMFS has not yet developed any serious injury criteria for turtles caught in scallop trawl gear.

According to the 2008 Biological opinion, the level of bycatch mortality removed from the turtle population would need to be much greater than the bycatch observed in the scallop fishery in order to have major effects on the population trajectory.

**Action Required by 2008 Biological Opinion**

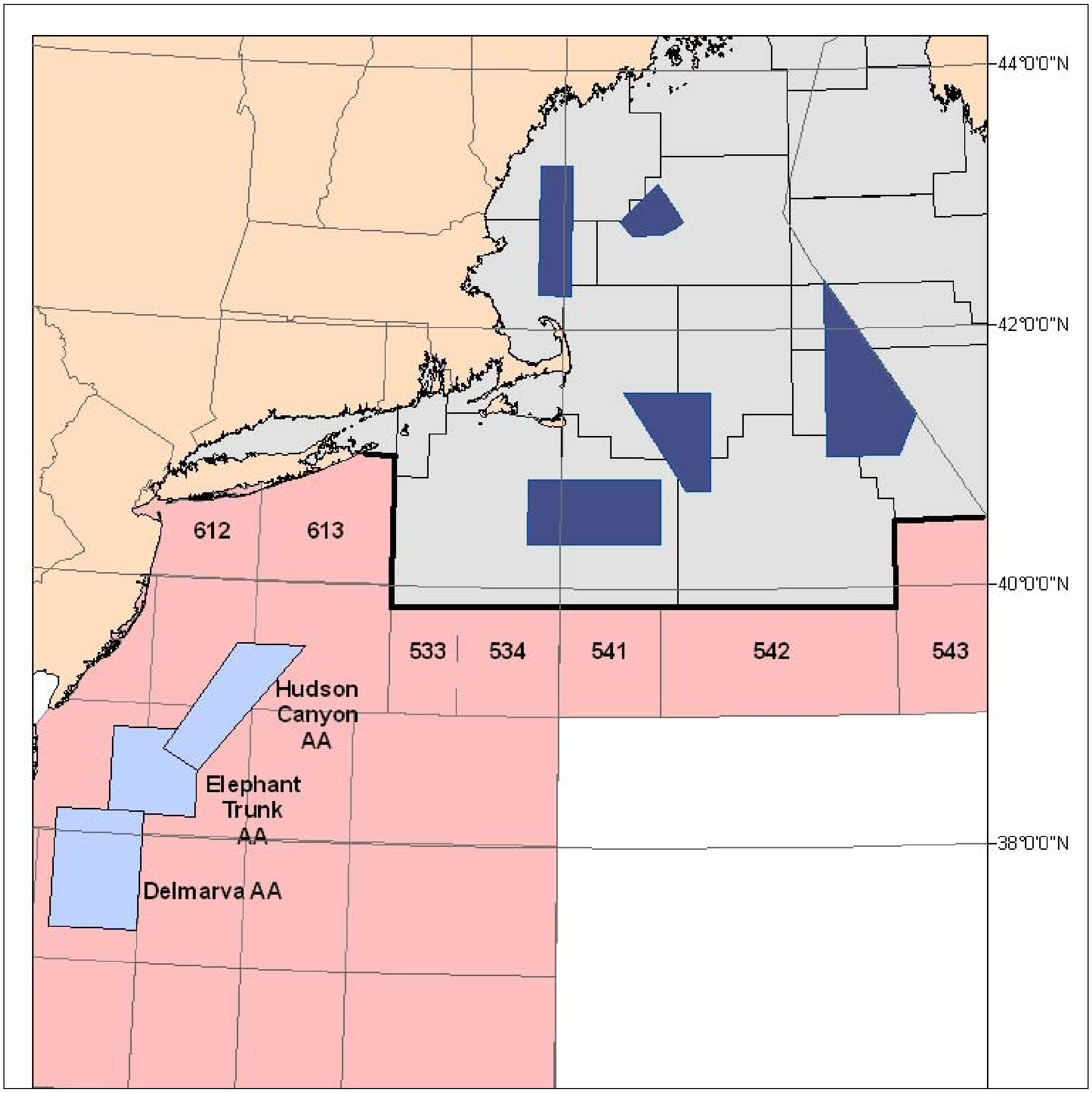
The overall conclusion of the 2008 Biological opinion for the sea scallop fishery is: "*After reviewing the current status of loggerhead, leatherback, Kemp's ridley, and green sea turtles, the environmental baseline and cumulative effects in the action area, the effects of the continued authorization of the Scallop FMP (including the seasonal use of chain mat modified scallop dredge gear in Mid-Atlantic waters), it is NMFS' biological opinion that the proposed activity may adversely affect but is not likely to jeopardize the continued existence of loggerhead, leatherback, Kemp's ridley and green sea turtles."*

Specifically, the 2008 Biological opinion concluded that the four ESA-listed turtles will continue to be affected by the continued authorization of the scallop fishery as a result of: (a) capture in scallop dredge and trawl gear, and (b) physical contact with chain-mat equipped scallop dredge gear that may or may not result in subsequent capture of the sea turtle in the dredge bag or retention of the turtle against the outside of the dredge bag that is visible upon hauling of the gear. However, one major impact on turtles generally is ship strikes, which the Biological opinion found the scallop fishing vessels unlikely to do based on (a) scallop fishing vessels operate at a relatively low speed, (b) a portion of the fishing occurs in areas in which sea turtles are less or not likely (Georges Bank and Gulf of Maine), (c) a portion of the fishing occurs at times when sea turtles are not likely to be present (winter in the Mid-Atlantic and late fall thru mid spring in New England), (d) sea turtles spend part of their time at depths out of range of a vessel collision, (e) the proposed action is not expected to increase the amount of vessel traffic in areas where sea turtles occur, and (f) the fishery will continue as a limited access fishery such that the number of participants are expected to be further constrained. Lastly, continued authorization of the scallop fishery will not likely reduce the availability of prey for the four species of sea turtles.

The 2008 Biological opinion had five non-discretionary reasonable and prudent measures (RPMs) with an associated five terms and conditions (T&C) that implement the RPMs. The first RPM is the only one that directly affects the allocated effort in the fishery. The other RPMs (2-5) are more related to research needs and investigation of turtle interactions with the scallop fishery. RPM #1 states that *NMFS must limit the amount of allocated scallop fishing effort by "Limited access scallop vessels" as such vessels are defined in the regulations (50 CFR 648.2), that can be used in the area and during the time of year when sea turtle distribution overlaps with scallop fishing activity* (as amended 2/5/09). Its associated T&C is: *to comply with (RPM*

*1), no later than the 2010 scallop fishing year, NMFS must limit the amount of allocated limited access scallop fishing effort that can be used in waters south of the northern boundaries of statistical areas 612, 613, 533, 534, 541-543* (Figure 1) *during the periods in which turtle takes have occurred. Restrictions on fishing effort described above shall be limited to a level that will not result in more than a minor impact on the fishery* (as amended 2/5/09).

**Figure 31 – Area defined in the biological opinion relating to sea turtles. Includes waters south of the northern boundaries of statistical areas 612, 613, 533, 534, 541, 542, and 543. In this document this area is sometimes described as the "Mid-Atlantic."**




The following are RPMs 2-5:

2. *NMFS must continue to investigate and implement, as appropriate, gear modifications for scallop dredge and trawl gear to reduce the capture of sea turtles and/or the severity of the interactions that occur.*

3. *NMFS must review available data to determine whether there are areas (i.e., "hot spots") within the action area where sea turtle interactions with scallop dredge and/or trawl gear are more likely to occur.*
4. *NMFS must quantify the extent to which chain mats reduce the number of serious injuries/deaths of sea turtles that interact with scallop dredge gear.*
5. *NMFS must determine (a) the extent to which sea turtle interactions with scallop dredge gear occur on the bottom vs. within the water column and (b) the effect on sea turtles of being struck by the scallop dredge.*

The T&C 2-5 are as follows:

2. *To comply with 2 above, NMFS must continue to investigate modifications of scallop trawl and dredge gear. Within a reasonable amount of time following completion of an experimental gear trial from or by any source, NMFS must review all data collected from the experimental gear trials, determine the next appropriate course of action (e.g., expanded gear testing, further gear modification, rulemaking to require the gear modification), and initiate action based on the determination. The goal of this RPM is ultimately to require modification of fishing gear used in the scallop fishery operating under the Atlantic Sea Scallop FMP within a reasonable timeframe following sound research that demonstrates that the gear modification is reasonable and feasible and will help to minimize the number and/or severity of sea turtle interactions with scallop fishing gear.*
3. *To comply with 3 above, NMFS must review all data available on the observed take of sea turtles in the scallop fishery and other suitable information (i.e., data on observed turtle interactions for other fisheries or fishery surveys in the area where the scallop fishery operates) to assess whether there is sufficient information to identify "hot spots" within the action area. Within a reasonable amount of time after completing the review, if NMFS determines that "hot spots" do exist, NMFS must take appropriate action to reduce sea turtle interactions and/or impacts within any identified hot spot.*
4. *To comply with 4 above, NMFS must use available and appropriate technologies (e.g., underwater video as part of an experiment using scallop dredge gear in either the natural or controlled environment, computer modeling, etc.) to quantify the extent to which chain mats reduce the number of serious injuries/deaths of sea turtles that interact with scallop dredge gear. This information is necessary to better determine the extent to which chain mats do reduce injuries leading to death for sea turtles and may result in further modifications of the fishery to ensure sea turtle interactions and/or interactions causing death are minimized. Initiate study no later than fiscal year 2009.*
5. *To comply with 5 above, NMFS must use available and appropriate technologies to better determine where (on bottom or in the water column) and how sea turtle interactions with scallop dredge gear are occurring. Such information is necessary to assess whether further gear modifications in the scallop dredge fishery will actually provide a benefit to sea turtles by either reducing the number of interactions or the number of interactions causing mortal injuries. Initiate study no later than fiscal year 2009.*

The 2008 Biological opinion also includes other requirements for monitoring, as well as several conservation recommendations. Conservation recommendations are discretionary activities designed to minimize or avoid adverse effects of an action, to help implement recovery plans, or to develop information. They are recommendations, not requirements like RPMs.

#### 4.3.1.5 Overall Sea Turtle Conservation

Below is a summary of some of the measures in place for turtle conservation under the Scallop FMP and outside of the Scallop FMP. In addition, this section summarizes the recent and current research being conducted on sea turtles and the scallop fishery that address many of the research objectives of the Reasonable and Prudent Measures identified in Biological Opinions for the scallop fishery.

<u>Measures in place outside the Scallop FMP that still affect the scallop fishery</u>

On February 15, 2007, NMFS issued an advance notice of proposed rulemaking to announce it is considering amendments to the regulatory requirements for turtle excluder devices (TEDs). Among other issues, NMFS is considering requiring the use of TEDs in the Mid-Atlantic sea scallop trawl fishery, and moving the current northern boundary of the summer flounder fishery sea turtle protection area off of Cape Charles, VA to a point farther north. The objective of the proposed measures is to effectively protect all life stages and species of sea turtles where they are vulnerable to incidental capture and mortality in Atlantic trawl fisheries.

Among the many recovery objectives identified in the Loggerhead Recovery Plan (NMFS and USFWS 2008), one is to minimize bycatch in domestic and international commercial and artisanal fisheries. The plan includes 34 Priority 1 Actions needed that include promulgating regulations to require TEDs in trawl fisheries where they are currently not required, implementing seasonal TED regulations for domestic commercial non-shrimp trawl fisheries operating from Cape Charles, VA, north to Long Island Sound, and enforcement of fishery regulations to minimize loggerhead bycatch in commercial trawl fisheries.

<u>Measures in place under the Scallop FMP</u>

There are a number of measures currently in place in the Scallop FMP that help minimize interactions with turtles and the effect of those interactions on turtles now and in the future. These measures include a seasonal closure in the ETA, the mandated use of a chain mat from May 1 through November 30 in all areas south of 41° 9.0' N, and the research set-aside program that has funded a number of turtle-related projects. In addition, rotational area management has increased catch per unit effort thus the time that gear is in the water and could impact turtles has been reduced dramatically. See Section 4.3.1.4 for more detailed analyses of how effort levels have changed in the scallop fishery, particularly in the Mid-Atlantic during the time of year when turtles are more likely to be present.

The seasonal closure in ETA was implemented in 2007 when the area reopened. For two months (September 1-October 31) each year, the entire access area is closed. So far, analyses support that this seasonal closure may be having beneficial impacts on turtles by shifting effort to other times of the year with lower bycatch rates, compared to shifting effort to open areas during the same season. In 2007 and 2008, effort in the ETA increased in March, April, August, November and December compared to overall fishing time in years before that when fishing was permitted in the ETA during September and October. Excluding August, all of these months have less likelihood of catching turtles given the lower probability of turtles being present in the ETA during these months (March, April, November, and December).

NMFS finalized a rule (71 FR 50361, August 23, 2006) that requires modification of Atlantic sea scallop dredge gear, regardless of dredge size, by a chain mat when the gear is fished in waters south of 41 9.0' N from the shoreline to the outer boundary of the EEZ during the period May 1 through November 30 each year. These regulations were modified through subsequent rulemakings (71 FR 66466, November 15, 2006; 73 FR 18984, April 8, 2008; 74 FR 46930, September 14, 2009). However, these modifications did not change the temporal or spatial extent of the chain mat requirements. The intent of the dredge gear modification is to reduce the severity of some turtle interactions that might occur by preventing turtles from entering the dredge bag.

While turtle observations have been reduced since the chain mat regulations went into place, there have still been several takes in the sea scallop dredge fishery in recent years. In 2007, there were 5 takes in scallop dredge gear. Four of the takes, all loggerhead sea turtles, occurred south of the northern boundary of the chain mat regulation, while one take, a Kemp's ridley sea turtle, was documented north of this line. Of the four takes south of the line, one of the turtles was observed on top of the dredge frame, swimming away before the dredge came on deck; two were observed in the dredge bag; and one turtle was reported between the chain mat and the dredge. There were two takes in scallop dredge gear in 2008 in the dredge frame. There were two takes in scallop dredge gear in 2009 (data available through Aug 09).

The research set-aside program, with additional NMFS financial support through contracts, has and continues to address many of the research objectives of the Reasonable and Prudent Measures (RPMs) identified in a series of Biological Opinions (BiOps) issued by NMFS for the sea scallop fishery. The sea scallop industry and its research partners have been working with NMFS to address specific RPMs since 2003. A summary of RPMs and how research has and continues to address sea turtle bycatch is below. Two outputs from some of this research that are currently being used by a growing number of scallop industry participants, but are not required, are a "turtle excluder dredge" and a "placard" that describes how to handle turtles safely and how to reduce the potential for interactions by rigging chain mats on the dredge.

<u>Specific research that has been conducted related to RPMs in 2008 biological opinion</u>
Research has been grouped by topic based on the RPMs in the 2008 biological opinion. The first RPM is related to limiting effort; RPMs #2 - #5, and the term and conditions (T&Cs) used to implement the RPMs are all related to research and are summarized below. There is no time limit for when the agency must comply with these RPMs, and it is likely that future research funded through the RSA program will continue to support these projects since turtle related research is listed as a research priority for RSA funds. This is not a complete list of the work that has been or is being conducted to help comply with these RPM, this is only a list of the projects the PDT is aware of, many of which were fully funded by, partially funded by the Scallop RSA program, or through contracts with NMFS.

RPM #2 – Term and Condition #2
*<u>RPM #2</u>: NMFS must continue to investigate and implement, as appropriate, gear modifications for scallop dredge and trawl gear to reduce the capture of sea turtles and/or the severity of the interactions that occur.*
*<u>T&C#2</u>: To comply with 2 above, NMFS must continue to investigate modifications of scallop trawl and dredge gear. Within a reasonable amount of time following completion of an experimental gear trial from or by any source, NMFS must review all data collected from the experimental gear trials, determine the next appropriate course of action (e.g., expanded gear testing, further gear modification, rulemaking to require the gear modification), and initiate*

*action based on the determination. The goal of this RPM is ultimately to require modification of fishing gear used in the scallop fishery operating under the Atlantic Sea Scallop FMP within a reasonable timeframe following sound research that demonstrates that the gear modification is reasonable and feasible and will help to minimize the number and/or severity of sea turtle interactions with scallop fishing gear.*

Turtle Excluder Devices (TEDs) have been proven to be an effective method to minimize adverse effects related to sea turtle bycatch in the shrimp trawl fishery, summer flounder trawl fishery, several state trawl fisheries, and certain other trawl fisheries around the world. TEDs have an escape opening, usually covered by a webbing flap that allows sea turtles to escape from trawl nets. On-going research is being conducted on catch retention of Atlantic sea scallops in trawl nets equipped with a TED.

As described above, the chain mat is designed to prevent sea turtles from being captured in the dredge bag. Another modification being tested is a modified dredge frame designed to guide sea turtles over the dredge. (See DuPaul et al, 2004 for more information). The chains were found to be 100% effective in keeping turtles out of the dredge bag during the research trials, but it should be noted that the potential exists for the smallest turtles to pass through the spacing in the chain and result in a take (NMFS 2008).

The two components of the design work independently; the chains prevent sea turtles from entering the dredge bag and the frame modifications prevent entrapment on top or underneath the dredge. While research continues to determine the magnitude of turtle encounters that take place while the dredge is on the sea floor or up in the water column, the new dredge design is proving to be successful in retaining scallop catch and has been shown to guide experimental sea turtle carcasses up and over the frame. This research is documented in the following reports: Smolowitz and Weeks, 2008; Smolowitz and Weeks, 2008b, Milliken et al., 2007, and Smolowitz et al., 2005.

RPM #3 – Term and Condition #3
*RPM#3: NMFS must review available data to determine whether there are areas (i.e., "hot spots") within the action area where sea turtle interactions with scallop dredge and/or trawl gear are more likely to occur.*
*T&C #3: To comply with 3 above, NMFS must review all data available on the observed take of sea turtles in the scallop fishery and other suitable information (i.e., data on observed turtle interactions for other fisheries or fishery surveys in the area where the scallop fishery operates) to assess whether there is sufficient information to identify "hot spots" within the action area. Within a reasonable amount of time after completing the review, if NMFS determines that "hot spots" do exist, NMFS must take appropriate action to reduce sea turtle interactions and/or impacts within any identified hot spot.*

Ongoing and proposed research using an ROV and oceanographic sampling in conjunction with sea turtle tracking is shedding light on the location of the turtles geographically and on the amount of time they spend at the surface and on the sea floor. These projects have advanced the ability to locate, track and observe loggerhead sea turtles through innovative use of dredge- and ROV-mounted video cameras and side-scan sonar. Recent field work carried out in July 2009 tracked and observed sea turtles throughout the water column with an ROV.

During the same time period, oceanographic data was collected at a series of stations and during aerial over-flights in order to establish the localized oceanographic features associated with turtle distributions. Proposed work will continue to build this unique set of observational records and use them to assess ideas regarding the factors that govern sea turtle distributions and behavior in the Mid-Atlantic Bight (MAB) shelf region. While past studies have focused mainly on sea surface temperature and bathymetry as controlling and/or predictive factors (e.g. Hawkes et al., 2007; Murray, 2007), ongoing research postulates that on time scales of days to weeks, sea turtle “hot spots” are more closely tied to the geography of oceanographic fronts associated with water mass and chlorophyll gradients driven by wind stress and buoyancy (density) contrasts. These linkages will be investigated by conducting regional hydrographic surveys with shipboard CTD (conductivity/ temperature/ depth), fluorometer and ADCP (Acoustic Doppler Current Profiler) measurements in conjunction with aerial sea turtle sighting and ROV video tracking surveys.

In addition, the NEFSC is currently analyzing observed turtle interactions in scallop dredge and trawl gear using a longer time series of data (2001 to 2008) to assess factors correlated with high and low bycatch rates in the scallop fishery.

RPM #4 – Term and Condition #4
*RPM#4: NMFS must quantify the extent to which chain mats reduce the number of serious injuries/deaths of sea turtles that interact with scallop dredge gear.*
*T&C #4: To comply with 4 above, NMFS must use available and appropriate technologies (e.g., underwater video as part of an experiment using scallop dredge gear in either the natural or controlled environment, computer modeling, etc.) to quantify the extent to which chain mats reduce the number of serious injuries/deaths of sea turtles that interact with scallop dredge gear. This information is necessary to better determine the extent to which chain mats do reduce injuries leading to death for sea turtles and may result in further modifications of the fishery to ensure sea turtle interactions and/or interactions causing death are minimized. Initiate study no later than fiscal year 2009.*

It is important to be able to quantify the effectiveness of chain mats in reducing potential injury to turtles during towing of the standard New Bedford dredge. The key cause of this potential injury is the possibility of a standard dredge running over a turtle on the seafloor. If one assumes that the turtle excluder dredge is highly effective in preventing turtles from getting under the cutting bar, a comparison of the two dredge types, without chain mats, would shed light on this issue. If both dredges have an equal probability of catching turtles in the water column, then a comparison should show no difference in takes between dredge types if there are no bottom interactions. This might indicate turtles are not suffering significant serious injury/deaths in interactions with conventional scallop gear as a result of interactions on the bottom. If the standard dredge catches significantly more turtles, then there is a high probability that it is catching those turtles on the sea floor and the potential for injury exists. Another issue regarding the modified frame is whether the initial encounter with the dredge causes injury, the severity of that injury, and the effectiveness of the modified dredge at reducing those injuries.

Proposed dredge comparison work will be a continuation of a study started by the NEFSC's Protected Species Branch and all protocols set forth by the NEFSC during previous contract work with Coonamessett Farm. To date, a total of more than 1500 paired tows have been observed following these protocols. In order to obtain statistically significant results, an additional 600 to 3000 paired tows may have to be observed due to the rarity of observed turtle-dredge interactions. This portion of the proposed study will take place on commercial fishing vessels working under normal fishing operations, but without the required turtle chain mats, during the months and areas in which loggerhead turtle interactions are known to occur. A total of at least 600 paired tows will be observed on vessels fishing a standard New Bedford scallop dredge and a Coonamessett Farm turtle excluder dredge simultaneously during 2010. A NMFS-certified scallop fisheries observer will be onboard to record all catch and tow data while also observing sea turtle interactions.

RPM #5 – Term and Condition #5
RPM#5: *NMFS must determine (a) the extent to which sea turtle interactions with scallop dredge gear occur on the bottom vs. within the water column and (b) the effect on sea turtles of being struck by the scallop dredge.*
T&C #5: *To comply with 5 above, NMFS must use available and appropriate technologies to better determine where (on bottom or in the water column) and how sea turtle interactions with scallop dredge gear are occurring. Such information is necessary to assess whether further gear modifications in the scallop dredge fishery will actually provide a benefit to sea turtles by either reducing the number of interactions or the number of interactions causing mortal injuries. Initiate study no later than fiscal year 2009.*

As mentioned above, ongoing and proposed use of ROVs and oceanographic sampling along with tracking of tagged sea turtles will likely provide more information on seasonal locations and behavior of these animals which will aid in bycatch avoidance and scallop management. Knowledge of where turtles spend their time in the water column is one of the major outcomes of this research, which will help to assess current gear regulations and proposed modifications.

On August 24, 2009, Coonamessett Farm and NMFS staff successfully attached Fastloc Argos satellite tags to two juvenile loggerhead turtles in the HCAA. The tags are transmitting turtle location, time at depth, and water temperature data. This data will be incorporated with all the other data collection efforts to evaluate juvenile loggerhead behaviors on the scallop grounds. The tagging and ROV work will provide information toward addressing RPM 5a.

RPMs from previous biological opinions that have been addressed through projects at least partially funded by the scallop RSA program
*NOAA Fisheries must ensure that guidance is provided to fishers in fishery to make them aware of sea turtle presence in fishing areas, advise them to not conduct tows where turtles are observed present at the surface, maintain <60 minute tow times, avoid damage to turtles possibly caught in dredge by lowering bag closer to deck before emptying and not dropping the dredge cutting bar on top of the catch; NOAA Fisheries must provide adequate guidance to all fishers participating in fishery prior to start of each FY so any incidental sea turtle take is handled w/due care, observed for activity, and returned to water;* (BiOps 2/24/2003, 2/23/2004)

This was addressed by the production of a wheelhouse card that was distributed to each vessel in the limited access scallop fleet. The card was designed and produced as a joint effort of the FSF, Coonamessett Farm, VIMS and NMFS. In addition, a flyer addressing sea turtle conservation in the fishery was distributed to permit holders.

Handling the turtle to avoid injury can be achieved to a limited extent on a scallop vessel. During the season and area of turtles, after the dredge gets to the block and in the air, the crewmen can be instructed to observe if there is a turtle before dumping the dredge on deck. If there is a turtle, the captain and crew can use the other side's tackle to bring the bale over to the other side of the boat and use that side's tackle on the club stick to gently dump the contents of the bag without ever dropping the dredge or bag on deck. This protocol (or similar protocol) would reduce the likelihood of injury to the turtle when the bag is emptied on deck. The wheelhouse card identified measures the crew could take to reduce injury and mortality to sea turtles on deck.

*NOAA Fisheries must conduct video work to investigate how sea turtles interact with scallop fishery gear;* (BiOp 12/15/2004)
Dredge-mounted cameras have been and will continue to be used in an attempt to capture underwater interactions between scallop dredges and sea turtles. The first two projects described below were not successful in observing any turtle interactions with dredge gear. This led to a change in strategy identified in the third project; instead of cameras mounted on the dredge turtles were observed and followed a Remotely Operated Vehicle (ROV): (Smolowitz et al., 2005, Smolowitz et al., 2005b, Smolowitz and Weeks, 2009).

## 4.4 ECONOMIC AND SOCIAL TRENDS IN THE SEA SCALLOP FISHERY

### 4.4.1 Introduction

This section of the document describes the economic and social trends of the scallop fishery. Specifically trends in landings, revenues, prices, producer surplus and profits for the sea scallop fishery since 1994, and as such, it provides a background for the economic analyses that are conducted for Amendment 15 alternatives. In addition, this section describes background information about the scallop fishery in various ports and coastal communities in the Northeast.

#### 4.4.1.1 Trends in Landings, prices and revenues

In the fishing years 2002-2009, the landings from the northeast sea scallop fishery stayed above 50 million pounds, surpassing the levels observed historically (Figure 32). The recovery of the scallop resource and consequent increase in landings and revenues was striking given that average scallop landings per year were below 16 million pounds during the 1994-1998 fishing years, less than one-third of the present level of landings. The increase in the abundance of scallops coupled with higher scallop prices increased the profitability of fishing for scallops by the general category vessels. As a result, general category landings increased from less than 0.4 million pounds during the 1994-1998 fishing years to more than 4 million pounds during the last five fishing years (2005-2009), peaking at 7 million pounds in 2005 or 13.5% of the total scallop landings.

**Figure 32. Scallop landings by permit category and fishing year (dealer data)**

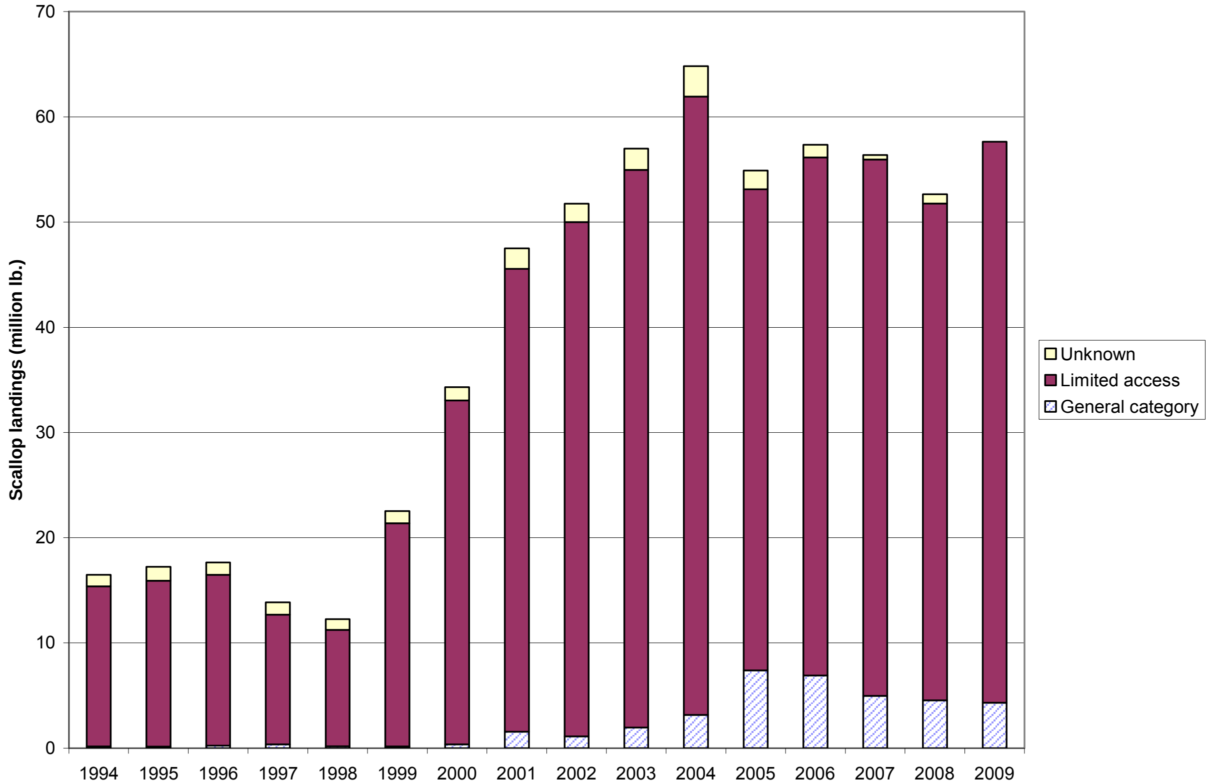



Figure 33 shows that total fleet revenues tripled from about $100 million in 1994 to about $370 million in 2009 (in inflation-adjusted 2008 dollars). Scallop ex-vessel prices increased after 2001 as the composition of landings changed to larger scallops that in general command a higher price than smaller scallops. However, the rise in prices was not the main factor that led to the increase in revenue in the recent years compared to 1994-1998. In fact, inflation adjusted ex-vessel prices in 2008-2009 were lower than prices in 1994 (Figure 33). The increase in total fleet revenue was mainly due to the increase in scallop landings and the increase in the number of active limited access vessels during the same period. Figure 34 shows that average landings and revenue per limited access vessel more than doubled in recent years compared to the period 1994 -1998. The number of active limited access vessels increased by 50% (from about 220 in 1994 to 347 in fishing year 2009) resulting in tripling of total fleet scallop landings and revenue in 2009 compared to 1994 (Figure 34).

**Figure 33. Trends in total scallop landings, revenue and ex-vessel price by fishing year (including limited access and general category fisheries, revenues are expressed in 2008 constant prices)**

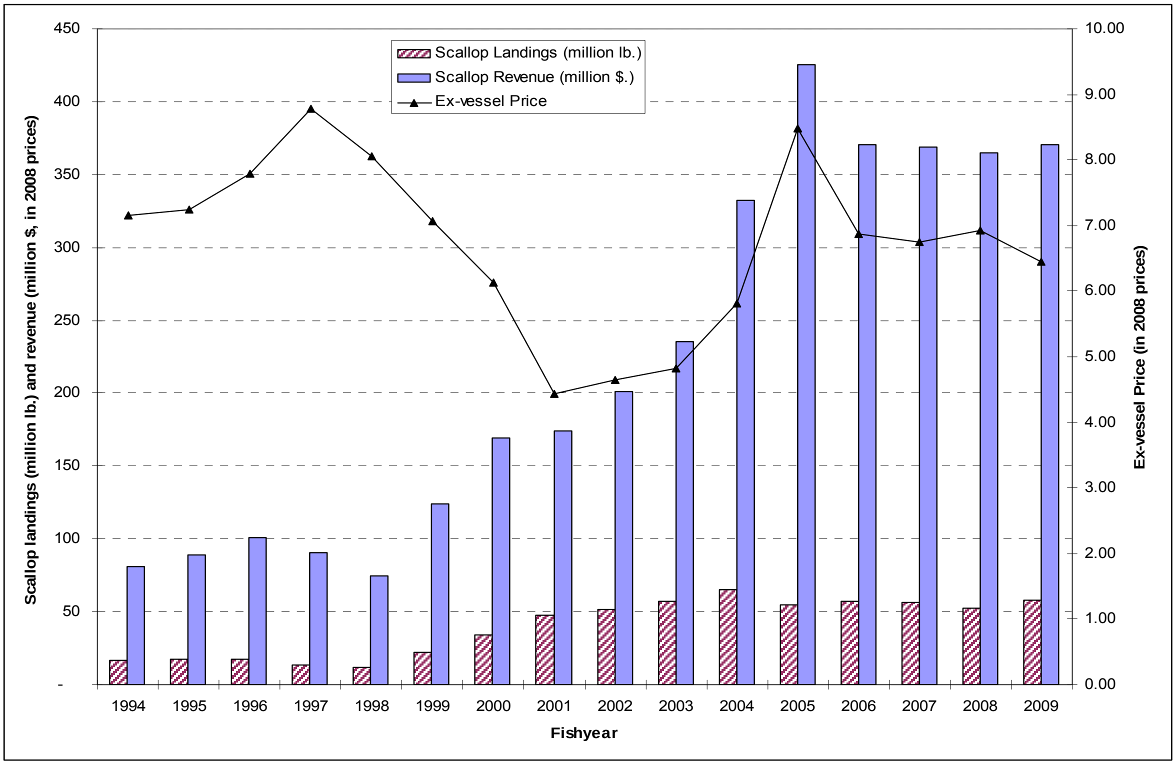
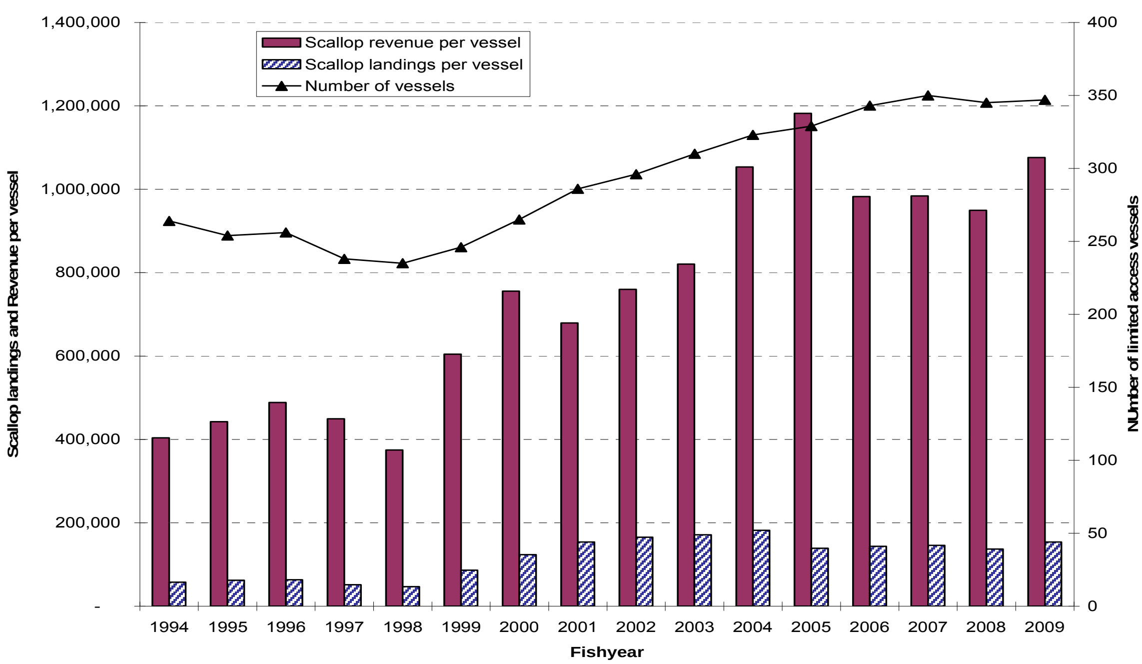



**Figure 34. Trends in average scallop landings and revenue per full time vessel and number of active vessels (including full-time, part-time and occasional vessels)**




The trends in revenue per full-time vessel were similar to the trends for the fleet as a whole. Figure 34 shows that average scallop revenue per limited access vessel more than doubled from about $400,000 in 1994 to over $1,000,000 despite the fact that inflation adjusted ex-vessel price per pound of scallops was slightly higher in 1994 ($7.15 per pound) compared to the ex-vessel price in 2009 ($6.46 per pound). In other words, the doubling of revenue was the result of the doubling of the average scallop landings per vessel in 2009 (over 153,000 pounds) from its level in 1994 (over 57,000 pounds). The total fleet revenue for all the limited access vessels more than tripled during the same years as new vessels became active. Average scallop revenue per full-time vessel peaked in the 2005 fishing year to over $1.1 million as a result of higher landings combined with an increase in ex-vessel price to about $8.50 per pound of scallops (in terms inflation adjusted 2008 prices).

Table 47 describes the fraction of total landings by area for all limited access vessels from 2004-2009. In general, more and more of the total catch for the fishery is coming from access areas, open area catch has declined from 60% to 71% of total catch in 2004-2004 to just under 40% in 2007 and 2008 and to under 53% in 2009.

**Table 47 – Percent of total limited access scallop catch by area and calendar year (Dealer and DAS data)**

| Access Area | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| Closed Area 1 | 0.00% | 14.51% | 0.00% | 9.83% | 0.00% | 0.00% |
| Closed Area 2 | 7.19% | 13.87% | 27.26% | 0.00% | 0.00% | 6.31% |
| Delmarva | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 10.32% |
| Elephant Trunk | 0.00% | 0.00% | 0.00% | 31.04% | 49.91% | 30.77% |
| Hudson Canyon | 29.24% | 0.00% | 0.00% | 10.02% | 0.00% | 0.00% |
| Nantucket Lightship | 3.69% | 0.00% | 16.49% | 10.39% | 9.84% | 0.00% |
| OPEN | 59.87% | 71.62% | 56.25% | 38.71% | 40.24% | 52.60% |

### 4.4.1.2 Trends in effort and LPUE

There has been a steady decline in the total DAS used by the limited access scallop vessels from 1994 to 2000 fishing years as a result of the effort-reduction measures of Amendment 4 (1994). DAS allocations during this period were reduced almost by half from 204 DAS in 1994 to 120 DAS for the full-time vessels and in the same proportions for the part-time and occasional vessels from their base levels in 1994 (Table 48). As a result, DAS used reached the lowest levels of about 23,000 days in the 1999 and 2000 fishing years from about 35,000 days in 1994 (Figure 35).

**Table 48. DAS and trip allocations per full-time vessel**

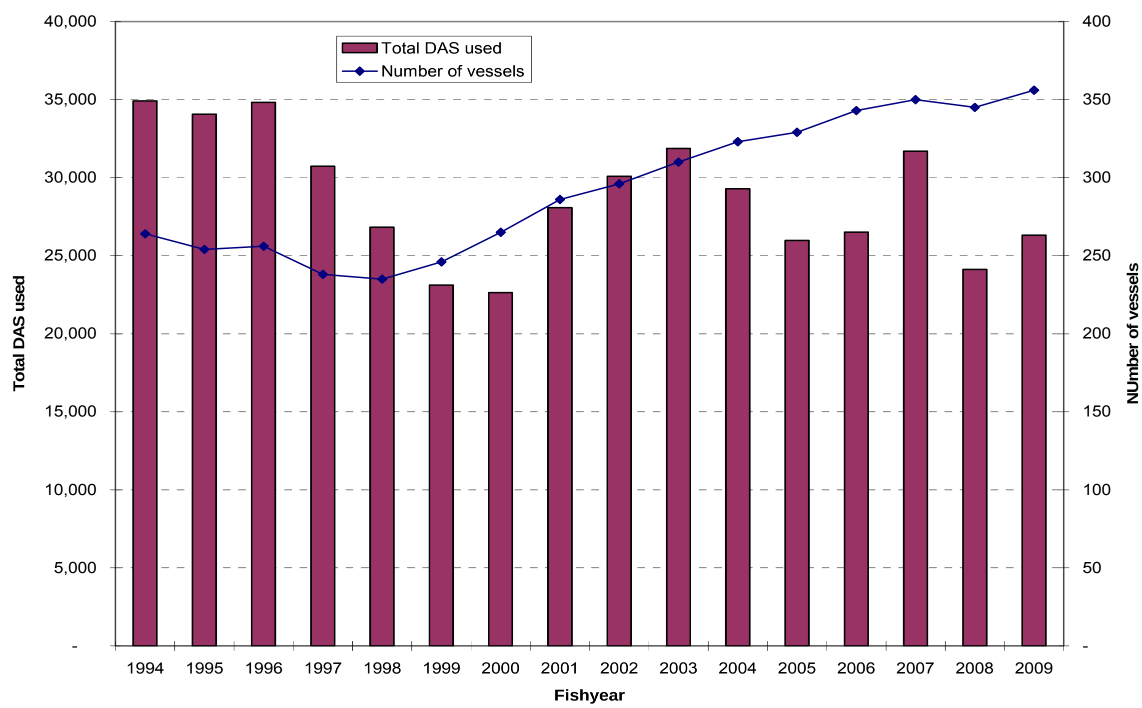
| Year | Allocations based on the Management Action | Total DAS Allocation (1) | Estimated Open area DAS allocations (2) | Access area trip allocations (3) | DAS charge or equivalent per access area trip (4) | Equivalent (estimated) DAS allocation for access areas (5) |
|---|---|---|---|---|---|---|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

| | | | | | | |
|---|---|---|---|---|---|---|
| **2005** | Framework 16 | 100 | 40 (MAX.117) | 5 | 12 | 60 |
| **2006** | Framework 18 | 112 | 52 | 5 | 12 | 60 |
| **2007** | Framework 18 | 111 | 51 | 5 | 12 | 60 |
| **2008** | Framework 19 | 95 | 35 | 5 | 12 | 60 |
| **2009** | Framework 19 | 97 | 37 | 5 | 12 | 60 |
| **2010** | Framework 21 | 86 | 38 | 4 | 12 | 48 |

Total DAS allocation per full-time vessel represents a rough estimate for years 2004-08 since DAS is allocated for open areas only. DAS allocation for access areas is estimated by assuming an equivalent 12 days-at-sea allocation for each access area trip with a possession limit of 18,000 pounds.

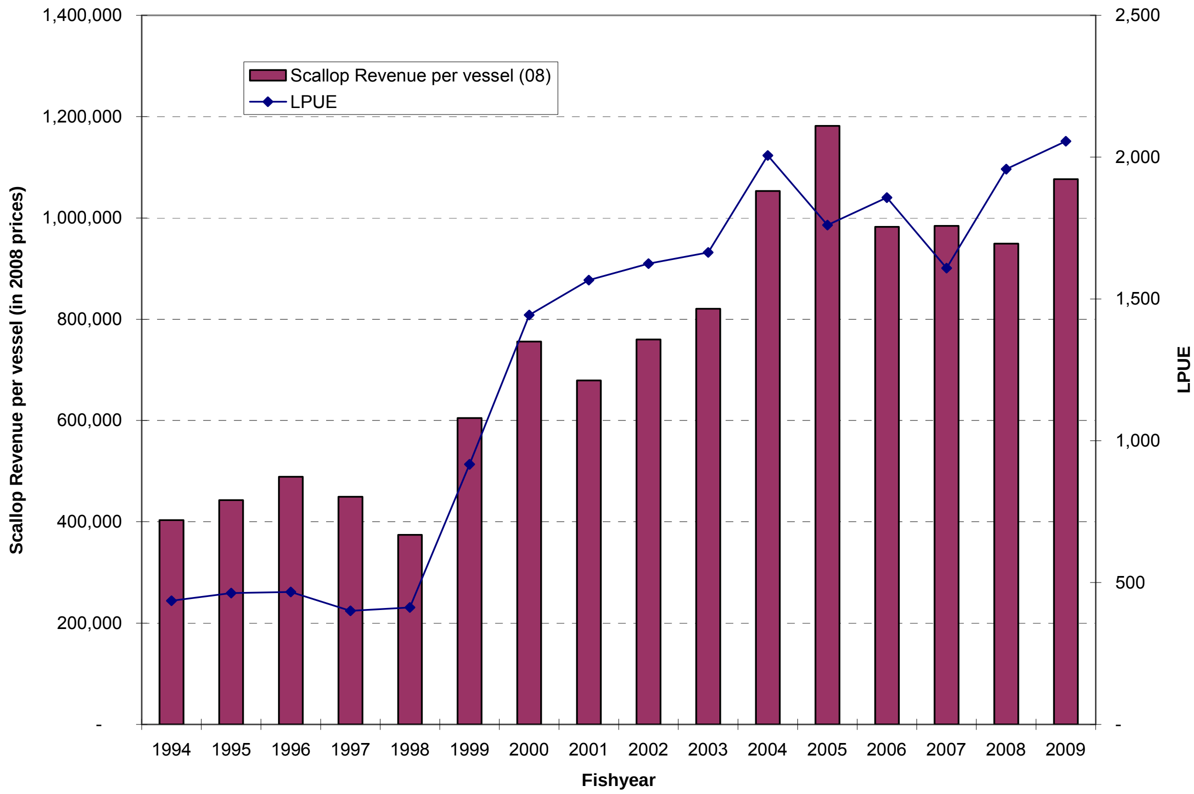
After fishing year 2000, fishing effort started to increase as more limited access vessels participated in the sea scallop fishery. The increase in total effort was mostly due to the increase in the number of vessels because total DAS allocations (mostly less than 120 days) were lower than the DAS allocations in the mid-1990s (over 142 days, Figure 35). The recovery of the scallop resource and the dramatic increase in fishable abundance after 1999 increased the profits in the scallop fishery, thus leading to an increase in participation by limited access vessels that had been inactive during the previous years. Georges Bank closed areas were opened to scallop fishing starting in 1999 by Framework 11 (CAII) and later by Framework 13 (CAII, CAI, NLS), encouraging many vessel owners to take the opportunity to fish in those lucrative areas. Frameworks 14 and 15 provided controlled access to Hudson Canyon and VA/NC areas. As a result, 45 new limited access vessels became active in the sea scallop fishery after 2000 during the next four fishing years. The total number of full-time equivalent vessels reached 310 in 2003 and total fishing effort by the fleet increased to 31,864 days in 2003 from about 22,627 in 2000 (Figure 35).

**Figure 35. Total DAS-used and the number of active limited access vessels (including full-time, part-time and occasional vessels) in the sea scallop fishery**



Total fishing effort (DAS used) declined after 2003 even though the number of active vessels increased to 343 vessels in 2006 from 310 vessels in 2003. With the implementation of Amendment 10 (2004) the limited access vessels were allocated DAS for open areas and a number of trips for the specific access areas with no open area trade-offs. The open area allocations were reduced to 42 DAS in 2004 whereas full-time vessels were allocated 7 access area trips in the same year (NEFSC, Framework 16). Even though total DAS equivalent allocations remained around the same levels during 2005-2007 (at about 110 equivalent days, Table 48), the fishing effort, i.e., fleet DAS used increased in the 2007 fishing year as many vessels took their unused 2005 HCA trips in that year. If not for those HCA trips, the total effort in the scallop fishery would probably have stayed constant during 2005-2007 with almost all qualified limited access vessels participating in the fishery. Total DAS-used declined further in 2008 to 24,121 days as the open area DAS allocations are reduced by 30% from 51 days to 35 days per full-time vessel, but increased to 26,300 as the limited access vessels received access area trips (5 trips per vessel). The impact of the decline in effort on scallop revenue per vessel was small, however, due to the increase in LPUE from about 1600 pounds per day-at-sea in 2007 to about 1950 pounds per day-at-sea in 2008 and to over 2050 pounds per day-at-sea in 2009 (Figure 36). As a result of the constant increase in LPUE after 1998 from about 450 pounds per DAS in 1994 to over 1500 pounds per DAS after 2003, scallop revenue per vessel more than doubled in recent years compared to the levels in mid 1990s.

**Figure 36. LPUE and average scallop revenue per limited access vessel**




### 4.4.1.3 Trends in the meat count and size composition of scallops

Average scallop meat count has declined continuously since 1999 as a result of effort-reduction measures, area closures, and an increase in ring sizes implemented by the Sea Scallop FMP. The share of larger scallops increased with the share of U10 scallops rising to over 20% during 2006-2008, and to 15% in 2009 compared to less than 10% in 2000-2004. The share of 11-20 count scallops increased from 12% in 1999 to 63% in 2008. On the other hand, the share of 30 or more count scallops declined from 30% in 1999 to 1% in 2008 (Table 49). Larger scallops priced higher than the smaller scallops contributed to the increase in average scallop prices in recent years despite larger landings (Table 50 and Figure 32).

**Table 49. Size composition of scallops**

| YEAR | Under 10 count | 11-20 count | 21-30 count | 30 count and over | Unclassified |
|---|---|---|---|---|---|
| 1999 | 17% | 12% | 25% | 35% | 12% |
| 2000 | 7% | 18% | 44% | 20% | 11% |
| 2001 | 3% | 24% | 49% | 11% | 13% |
| 2002 | 5% | 15% | 65% | 5% | 11% |
| 2003 | 6% | 21% | 56% | 3% | 13% |
| 2004 | 7% | 41% | 42% | 2% | 8% |
| 2005 | 13% | 57% | 21% | 2% | 7% |
| 2006 | 23% | 52% | 18% | 1% | 6% |
| 2007 | 24% | 52% | 13% | 4% | 8% |
| 2008 | 23% | 53% | 18% | 1% | 4% |
| 2009 | 15% | 63% | 19% | 0% | 2% |

**Table 50. Price of scallop by market category (in 2008 inflation adjusted prices)**

| YEAR | <=10 count | 11-20 count | 21-30 count | >30 count |
|---|---|---|---|---|
| 1999 | 7.8 | 7.9 | 7.3 | 6.4 |
| 2000 | 8.7 | 6.8 | 5.9 | 6.1 |
| 2001 | 7.2 | 4.7 | 4.4 | 4.7 |
| 2002 | 6.7 | 4.8 | 4.5 | 5.1 |
| 2003 | 5.7 | 4.8 | 4.8 | 5.3 |
| 2004 | 6.8 | 5.8 | 5.5 | 5.7 |
| 2005 | 8.8 | 8.6 | 8.5 | 8.3 |
| 2006 | 6.6 | 7.3 | 7.6 | 7.6 |
| 2007 | 7.2 | 6.9 | 6.8 | 6.2 |
| 2008 | 7.2 | 6.9 | 6.8 | 6.4 |
| 2009 | 8.2 | 6.5 | 6.2 | 6.4 |

### 4.4.1.4 Trends in Foreign Trade

One of most significant change in the trend for foreign trade for scallops after 1999 was the striking increase in scallop exports. The increase in landings especially of larger scallops led to a tripling of U.S. exports of scallops from about 5 million pounds in 1999 to about 25 million pounds per year since 2005 (Figure 37). Figure 37 shows exports from New England and Mid-Atlantic ports combined including fresh, frozen and processed scallops. Although exports include exports of bay, calico or weathervane scallops, it mainly consists of sea scallops. France and other European countries were the main importers of US scallops. The exports from all other states and areas totaled only about $1 million in 2006 and 2007, and thus were not considered significant. Imports of scallops fluctuated between 45 million pounds and 60 million pounds during the period 1999 and 2009.

Because of the increase in the value of scallop exports to over $130 million after 2004, the difference in the value of exported and imported scallops, that is scallop trade deficit, declined considerably (Figure 38). Therefore, rebuilding of scallops as a result of the management of the scallop fishery benefited the nation by reducing the scallop trade deficit from over $230 million in 1994 to less than $80 million in 2009.

**Figure 37. Scallop imports and exports (by calendar year)**

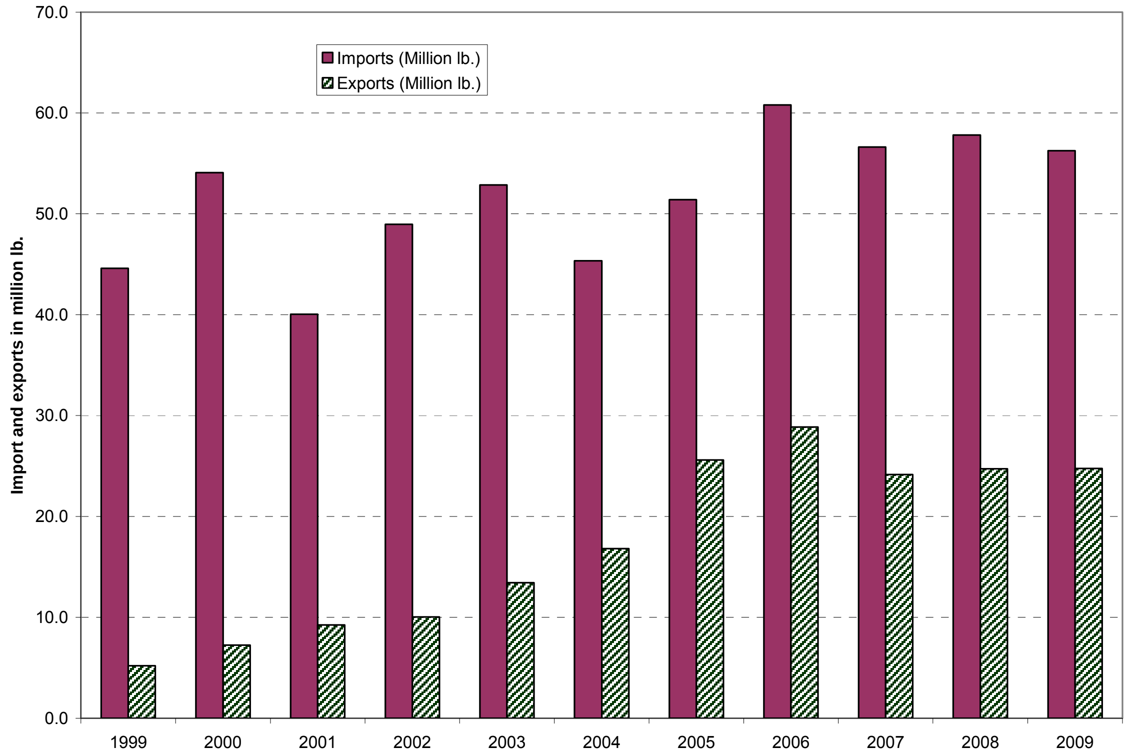
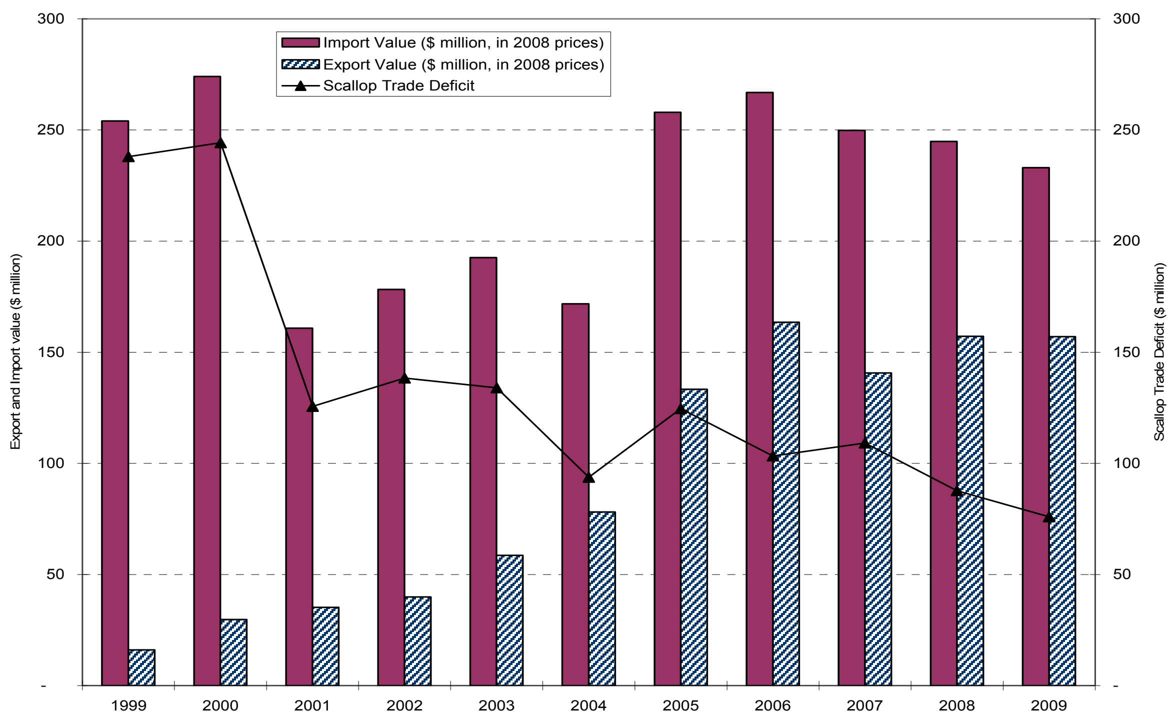



**Figure 38. Value of Scallop imports and exports (by calendar year)**



#### 4.4.1.5 The trends in participation by permit, vessel characteristics and gear type

Table 51 shows the number of limited access vessels by permit category from 1999 to 2010. The fishery is primarily full-time, with a small number of part-time permits. There no occasional permits left in the fishery since 2009 because these were converted to part-time small dredge. The number of full-time vessels has been on the rise since 1999. Of these permits, the majority are dredge vessels, with a small amount of full-time small dredge and full-time trawl vessels. The permit numbers shown in Table 51 include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number. The unique vessels with right-id numbers are shown in Table 52 for 2008-2010. For example, only 347 out of 362 permits in 2008 belonged to unique vessels. Even if the number of permits in 1999 fishing year included only the number of unique vessels, this would mean an increase in the number of limited access vessels by 56 vessels (347-291), or by about 20% since 1999.

Table 53 through Table 59 describe scallop landings by limited access vessels by gear type and permit category. These tables are obtained from the dealer and permit data. Most limited access category effort is from vessels using scallop dredges, including small dredges (Table 56). The number of vessels using scallop trawl gear has decreased continuously and has been at 11 full-time trawl vessels since 2006. In comparison, there has been an increase in the numbers of full-time and part-time small dredge vessels after 2002.

In terms of landings, most scallop landings by the limited access vessels are with dredge gear including the small dredges (Table 53), with significant amounts also landed by full-time and part-time trawls. Table 54 shows the percent of limited access landings by primary gear and year. About 80% of the scallop pounds are landed by full-time dredge and about 13% landed by full-time small dredge vessels since the 2007 fishing year.

**Table 51. Number of limited access vessels by permit category and gear**

| Permit category | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Full-time | 213 | 220 | 224 | 234 | 238 | 242 | 248 | 255 | 256 | 254 | 259 | 252 |
| Full-time small dredge | 1 | 3 | 13 | 25 | 39 | 48 | 57 | 59 | 63 | 56 | 55 | 54 |
| Full-time net boat | 16 | 17 | 16 | 16 | 16 | 15 | 19 | 14 | 12 | 11 | 12 | 11 |
| **Total full-time** | 230 | 240 | 253 | 275 | 293 | 305 | 324 | 328 | 331 | 321 | 326 | 317 |
| Part-time | 12 | 16 | 14 | 14 | 10 | 4 | 3 | 3 | 2 | 2 | 3 | 3 |
| Part-time small dredge | 3 | 4 | 6 | 8 | 19 | 26 | 30 | 34 | 35 | 32 | 34 | 35 |
| Part-time trawl | 22 | 20 | 18 | 10 | 8 | 3 | - | - | - | - | - | - |
| **Total part-time** | 37 | 40 | 38 | 32 | 37 | 33 | 33 | 37 | 37 | 34 | 37 | 38 |
| Occasional | 4 | 4 | 5 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | - | - |
| Occasional trawl | 20 | 16 | 19 | 15 | 8 | 5 | 5 | - | - | - | - | - |
| **Total occasional** | 24 | 20 | 24 | 19 | 11 | 8 | 6 | 2 | 1 | 1 | 1 | 1 |
| **Total Limited access** | 291 | 300 | 315 | 326 | 342 | 346 | 363 | 367 | 369 | 356 | 362 | 354 |

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number.

**Table 52. Scallop Permits by unique right-id and category by application year**

| Permit category | 2008 | 2009 | 2010 |
|---|---|---|---|
| Full-time | 250 | 250 | 250 |
| Full-time small dredge | 52 | 52 | 52 |
| Full-time net boat | 11 | 11 | 11 |
| **Total full-time** | **313** | **313** | **313** |
| Part-time | 2 | 2 | 2 |
| Part-time small dredge | 31 | 32 | 32 |
| Part-time trawl | 0 | 0 | 0 |
| **Total part-time** | **33** | **34** | **34** |
| Occasional | 1 | 0 | 0 |
| **Total Limited access** | 347 | 347 | 347 |

**Table 53. Scallop landings (lb.) by limited access vessels by permit category and gear**

| FISHYEAR | FT Dredge | PT Dredge | FT SMD | PT SMD | FT TRW | PT TRW | OC TRW |
|---|---|---|---|---|---|---|---|
| 1994 | 12,927,171 | 90,409 | 45,787 | 3,279 | 1,586,390 | 313,405 | 74,749 |
| 1995 | 13,760,573 | 205,147 | NA | NA | 1,477,777 | 140,282 | 45,409 |
| 1996 | 14,185,830 | 259,791 | NA | 4,695 | 1,282,612 | 379,459 | 93,375 |
| 1997 | 11,096,201 | 148,742 | | 16,896 | 773,273 | 237,763 | 7,089 |
| 1998 | 9,502,888 | 84,929 | NA | NA | 1,111,118 | 315,627 | NA |
| 1999 | 18,895,722 | 303,397 | NA | NA | 1,382,335 | 520,689 | 15,950 |
| 2000 | 28,992,280 | 658,551 | NA | NA | 1,871,048 | 661,936 | 14,284 |
| 2001 | 38,728,109 | 861,087 | 765,341 | 183,880 | 2,578,316 | 744,057 | 17,140 |
| 2002 | 42,260,391 | 918,534 | 1,824,090 | 161,157 | 2,980,542 | 587,012 | 32,026 |
| 2003 | 45,461,777 | 932,815 | 3,112,784 | 523,538 | 2,612,065 | 272,668 | 381 |
| 2004 | 48,809,720 | 338,649 | 5,654,387 | 835,495 | 2,432,866 | 125,917 | 17,615 |
| 2005 | 37,960,280 | 290,222 | 4,749,421 | 1,477,081 | 1,097,019 | | NA |
| 2006 | 40,808,025 | NA | 5,325,485 | 1,400,217 | 1,210,658 | | |
| 2007 | 40,401,524 | NA | 6,634,241 | 1,520,113 | 1,647,474 | | |
| 2008 | 37,948,082 | NA | 6,185,988 | 1,334,990 | 1,536,814 | | |
| 2009* | 36,776,722 | NA | 6,135,801 | 1,214,674 | 1,732,518 | | |

**Preliminary*

*NA: Landings are not shown if the number of vessels in a cell is less than 3 to protect confidentiality*

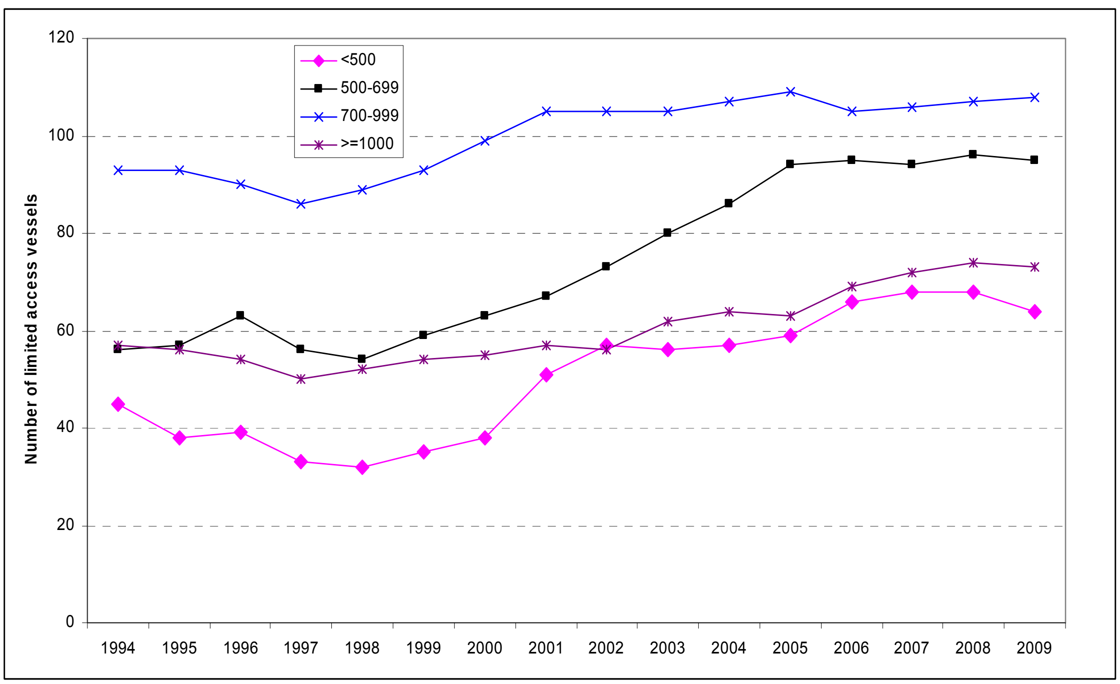
Table 54. Percentage of limited access scallop landings (lb.) by permit category and gear

| FISHYEAR | FT Dredge | PT Dredge | FT SMD | PT SMD | FT TRW | PT TRW | OC TRW |
|---|---|---|---|---|---|---|---|
| 1994 | 85.9% | 0.6% | 0.3% | 0.0% | 10.5% | 2.1% | 0.5% |
| 1995 | 87.7% | 1.3% | NA | NA | 9.4% | 0.9% | 0.3% |
| 1996 | 87.4% | 1.6% | NA | 0.0% | 7.9% | 2.3% | 0.6% |
| 1997 | 90.4% | 1.2% | 0.0% | 0.1% | 6.3% | 1.9% | 0.1% |
| 1998 | 86.2% | 0.8% | NA | NA | 10.1% | 2.9% | NA |
| 1999 | 89.4% | 1.4% | NA | NA | 6.5% | 2.5% | 0.1% |
| 2000 | 89.8% | 2.0% | NA | NA | 5.8% | 2.1% | 0.0% |
| 2001 | 88.3% | 2.0% | 1.7% | 0.4% | 5.9% | 1.7% | 0.0% |
| 2002 | 86.7% | 1.9% | 3.7% | 0.3% | 6.1% | 1.2% | 0.1% |
| 2003 | 85.9% | 1.8% | 5.9% | 1.0% | 4.9% | 0.5% | 0.0% |
| 2004 | 83.8% | 0.6% | 9.7% | 1.4% | 4.2% | 0.2% | 0.0% |
| 2005 | 83.3% | 0.6% | 10.4% | 3.2% | 2.4% | 0.0% | NA |
| 2006 | 83.6% | NA | 10.9% | 2.9% | 2.5% | 0.0% | 0.0% |
| 2007 | 80.1% | NA | 13.2% | 3.0% | 3.3% | 0.0% | 0.0% |
| 2008 | 80.4% | NA | 13.1% | 2.8% | 3.3% | 0.0% | 0.0% |
| 2009* | 79.8% | NA | 13.3% | 2.6% | 3.8% | 0.0% | 0.0% |

**Preliminary*
*NA: Landings are not shown if the number of vessels in a cell is less than 3 to protect confidentiality*

Horsepower of permitted vessels in the limited access fleet ranges from <500 hp to greater than 1000 hp. The majority of the small dredges had a horsepower of less than 500. Majority of the limited access vessels had a horse power of 700 to 999 HP. The number of vessels that had a horsepower of 1000 or more increased, especially since 2005. The overall fleet horsepower average has been on the rise but, like fleet size, shows signs of leveling off in the most recent years of data (Figure 39).

**Figure 39. Number of limited access vessels by horsepower (including full-time, part-time and occasional vessels**



In contrast, most of the general category scallop vessels are small boats with a horsepower less than 500 (Figure 40). The number of active general category vessels increased sharply after 2000 fishing year, but has been falling down as a result of the qualification measures included in Amendment 11 to the sea scallop FMP.

**Figure 40. Number of general category vessels by horsepower (including full-time, part-time and occasional vessels**

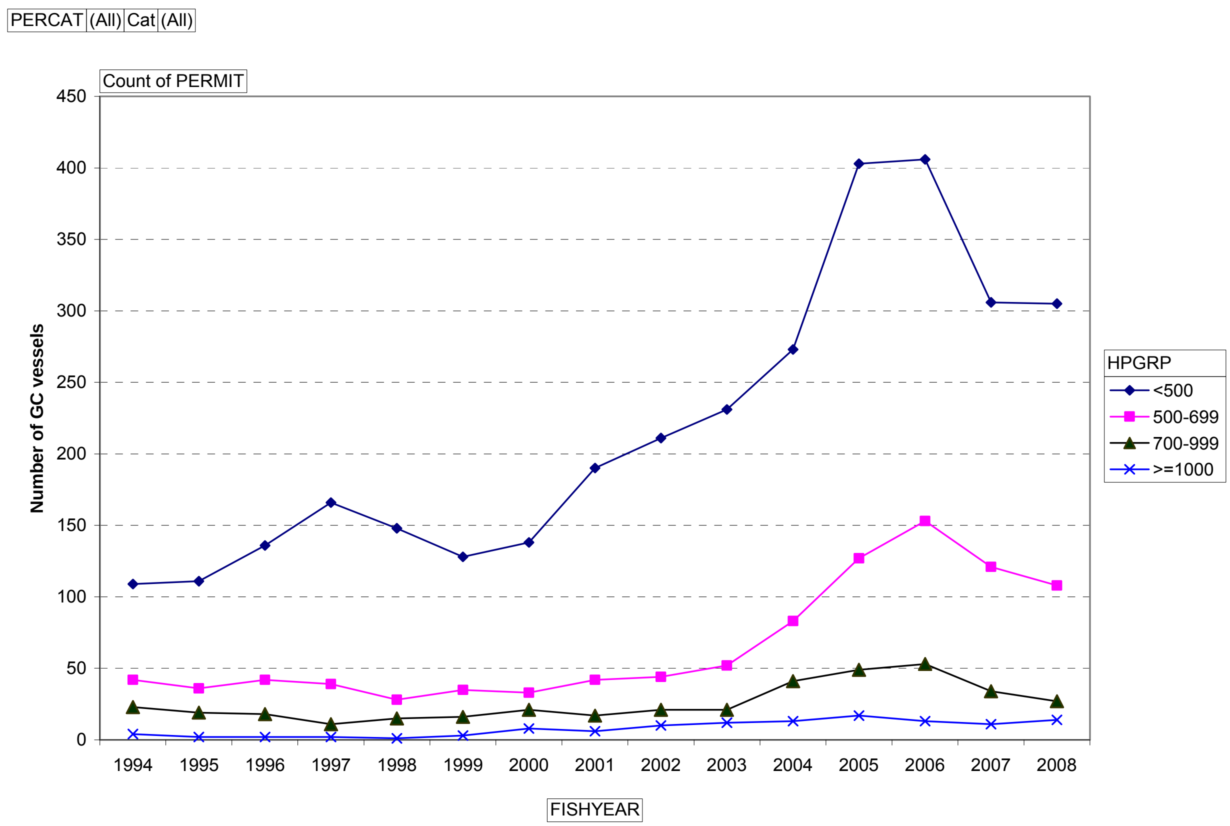



Table 56 through Table 59 describe general category landings by gear type. These tables are generated by VTR data and since not all VTR records include gear information, the number of vessels in these tables will differ from other tables that summarize general category vessels and landings from dealer data. Primary gear is defined as the gear used to land more than 50% of scallop pounds. Most general category effort is and has been from vessels using scallop dredge and other trawl gear (Table 56). The number of vessels using scallop trawl gear increased through 2006 but has declined in recent years. In terms of landings, most scallop landings under general category are with dredge gear (Table 57), with significant amounts also landed by scallop trawls and other trawls. Table 59 shows the percent of general category landings by primary gear and year. The percentages of scallop landings with other trawl gear in 2008 and 2009 were the highest they have been since 2001, but still significantly less than dredge.

Both full-time and part-time limited access vessels had a high dependence on scallops as a source of their income and the majority of the full-time (96%) and the part-time vessels (71%) derived more than 90% of their revenue from the scallop fishery during 2008-2009 (Table 55). Section 5.7 (Impact on other Fisheries) and subsection 5.7.3.1 of Amendment 15 provide detailed information on the composition of revenue and revenues from other species for the LA vessels.

The current data on the scallop landings and revenue by the limited access general category vessels is less than perfect, however. One reason for this is that many general category vessels also have limited access permits and their landings and revenues are summed up in the dealer data. It is also possible that a permit number for a limited access vessel is given to a general category vessel when the former vessel is replaced by another vessel. Another reason is that although the limited access general category vessels were allowed to land no more than 400lb. of scallops per trip, many of these trips are summed up together in the dealer data making it hard to separate general category trips form the limited access trips by the full-time and part-time vessels. For these reasons, the data provided in Table 58 based on the assumption that all the trips by vessels with a general category permit and with a maximum landing of 4000 lb. belong to vessels to limited access permit holders. This assumption produced reasonable results in terms of total general category landings (in excess of 4million lb. in 2008-2009). The results again shows that the majority (more than 70%) of the limited access general category IFQ and the general category NGOM permit holders derived more than 90% of their revenues from the scallop fishery (Table 58). Therefore, except for the limited access general category incidental permit holders that are permitted land no more than 40 lb. of scallops in each trip), scallop fishing is an important source of income for the majority of vessels in the scallop fishery. The increase in scallop prices resulted in higher revenues for all participants and increased the share of scallops in their total income. For the limited access general category vessels the percentage of the total revenue from scallops will likely to decline in 2010 because these vessels were allocated about 10% of the total TAC in 2008-2009 but were allocated 5.5% of the total TAC starting with 2010 according to the provisions of Amendment 11. Section 4.4.6 of Amendment 15 provides information on the composition of revenues for the limited access general category vessels and discusses some of the data limitations. The composition of revenue for the general category vessels are shown in Table 60.

**Table 55. Dependence of scallop revenue by limited access vessels**

| Permit category | Scallop revenue as a % of total | 2008 | | 2009 | |
|---|---|---|---|---|---|
| | | Number of vessels | % of total vessels | 2009 | Number of vessels |
| FT | <75% | 7 | 2% | 6 | 2% |
| | 75%-89% | 7 | 2% | 17 | 5% |
| | >=90% | 315 | 96% | 310 | 93% |
| Total | | 329 | 100% | 333 | 100% |
| PT | <75% | 7 | 17% | 13 | 32% |
| | 75%-89% | 5 | 12% | 3 | 7% |
| | >=90% | 29 | 71% | 25 | 61% |
| Total | | 41 | 100% | 41 | 100% |

**Table 56. Number of general category vessels by primary gear and fishing year**

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

** indicates 3 or less vessels*
*UNK - value unknown*

**Table 57. General category scallop landings by primary gear (pounds)**

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

** value unknown*

**Table 58. Dependence of scallop revenue by limited access general category vessels**

| Permit category | Scallop revenue as a % of total | 2008 | | 2009 | |
|---|---|---|---|---|---|
| | | Number of vessels | % of total vessels | 2009 | Number of vessels |
| LAGC- IFQ | <10% | 33 | 14% | 21 | 9% |
| | 10%-49% | 11 | 5% | 9 | 4% |
| | 50%-74% | 5 | 2% | 5 | 2% |
| | 75%-89% | 16 | 7% | 12 | 5% |
| | >=90% | 176 | 73% | 194 | 80% |
| Total | | 241 | 100% | 242 | 100% |
| LAGC-NGO | <10% | 34 | 13% | 24 | 9% |
| | 10%-49% | 9 | 3% | 4 | 2% |
| | 50%-74% | 6 | 2% | 5 | 2% |
| | 75%-89% | 17 | 6% | 13 | 5% |
| | >=90% | 196 | 74% | 211 | 80% |
| Total | | 265 | 100% | 263 | 100% |

Source: Dealer data

**Table 59. Percentage of general category scallop landings by primary gear**

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

** value unknown*

**Table 60. Composition of Revenue for the Limited Access general category vessels**

| type | | | 2008 | 2009 | 2010 (YTD) |
|---|---|---|---|---|---|
| LAGC-IFQ | Sea Scallops | Value | 54,893,231 | 62,649,588 | 19,258,744 |
| | | % of total | 56.7 | 61.6 | 65.2 |
| LAGC-IFQ | Haddock | Value | 4,650,763 | 5,154,400 | 2,525,802 |
| | | % of total | 4.8 | 5.1 | 8.6 |
| LAGC-IFQ | Cod | Value | 4,896,581 | 4,003,189 | 1,196,895 |
| | | % of total | 5.1 | 3.9 | 4.1 |
| LAGC-IFQ | Summer Flounder | Value | 3,661,464 | 3,971,164 | 1,381,125 |
| | | % of total | 3.8 | 3.9 | 4.7 |
| LAGC-IFQ | Winter Flounder | Value | 4,163,718 | 3,764,240 | 518,436 |
| | | % of total | 4.3 | 3.7 | 1.8 |
| LAGC-IFQ | Ocean Quahog | Value | 3,791,416 | 2,913,891 | . |
| | | % of total | 3.9 | 2.9 | . |
| LAGC-IFQ | Monkfish | Value | 3,734,324 | 2,288,828 | 542,626 |
| | | % of total | 3.9 | 2.2 | 1.8 |
| LAGC-IFQ | Yellowtail Flounder | Value | 1,690,474 | 1,579,854 | 606,050 |
| | | % of total | 1.7 | 1.6 | 2.1 |
| LAGC-NGO | Sea Scallops | Value | 22,567,094 | 28,040,044 | 12,354,379 |
| | | % of total | 60.1 | 59.8 | 73.2 |
| LAGC-NGO | Cod | Value | 3,052,147 | 3,718,290 | 1,224,251 |
| | | % of total | 8.1 | 7.9 | 7.3 |
| LAGC-NGO | Atlantic Herring | Value | 2,990,716 | 2,550,620 | 351,237 |
| | | % of total | 8.0 | 5.4 | 2.1 |
| LAGC-NGO | Monkfish | Value | 1,768,256 | 1,734,338 | 649,427 |
| | | % of total | 4.7 | 3.7 | 3.8 |
| LAGC-NGO | Pollock | Value | 1,158,016 | 1,664,891 | 273,895 |
| | | % of total | 3.1 | 3.6 | 1.6 |
| LAGC-NGO | Lobster | Value | 1,931,352 | 1,659,344 | 152,091 |
| | | % of total | 5.1 | 3.5 | 0.9 |
| LAGC-NGO | Yellowtail Flounder | Value | 370,510 | 407,139 | 128,884 |
| | | % of total | 1.0 | 0.9 | 0.8 |

#### 4.4.1.6 Trends in ownership patterns in the scallop fishery

**Limited access vessels**

According to the ownership data for 2008, only 75 out of 346 vessels were owned by one person and/or cooperation (Table 61). The rest were owned by several individuals and/or different corporations with ownership interest in more than one vessel. This factor makes it difficult assigning each vessel to a specific group of owners. The following tables were generated by selecting a primary owner for each group of vessels that are owned by multiple individuals/entities based on the maximum number of vessels owned by one person/entity. For example, if Mr. A and Mrs. B were listed as the joint owners of the same 5 vessels, but Mrs. B was also listed as an owner of additional two vessels, Mrs. B has been assigned as the primary owner of these 7 vessels. Therefore, each owner group in Table 61 includes more than one person (usually several family members), who collectively own the corresponding number of vessels. For example, in the 16 to 17 category, 4 different sets of owners own 56 boats with each of the 4 sets containing multiple individuals/entities.

Because there were overlaps with owners for multiple vessels, such that two people has ownership interest in 5 boats, primary ownership was assigned to one person in 3 out of 5 boats, and the other person was assigned the 2 remaining boats. Another example includes common ownership of a vessel, with each individual also owning another vessel: Vessel A was owned by Mr. A, but Mr. A also owned another boat, Vessel B together with Mr. B, who owned 5 boats. As a result, vessel B was assigned to Mr. B because he is a 5 boat owner. But Mr. A can stack his DAS allocation on vessel B because he has an ownership interest in it. As a result, therefore, Mr. A was classified as a multi-boat owner even though only one vessel's ownership (Vessel A) was assigned to him.

Table 61 shows that only 22% of the limited access vessels were owned by one person, whereas 16% of the vessels are owned by 4 separate entities (group of individuals). The concentration of ownership could be even more than shown in Table 61 because not all family relationships could be taken into account according to the method applied above. The owners of 16 to 17 vessels (4 entities) landed about 16% of scallops in 2008 fishing year, and owners of 6 to 9 vessels (11 separate entities) landed over 21% of scallops in the same fishing year, amounting to over 37% of the scallops landings by these two groups (Table 62). The landings by single boat owners amounted to about 20% of the total fleet landings in 2008.

**Table 61. Owner groups according to the number of vessels with ownership interest**

| Owner group according to number of vessels owned | Number of owners | Number of vessels | Number of vessels owned as a % of all vessels |
|---|---|---|---|
| 1 | 75 | 75 | 22% |
| 2 | 26 | 52 | 15% |
| 3 | 10 | 29 | 8% |
| 4 | 10 | 37 | 11% |
| 5 | 5 | 23 | 7% |
| 6 to 9 | 11 | 74 | 21% |
| 16 to 17 | 4 | 56 | 16% |
| Grand Total | 141 | 346 | 100% |

**Table 62. Percentage of Scallop landings by limited access vessels according to the number of vessels owned and fishyear**

| Number of vessels owned in 2008 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|
| 1 | 18.34% | 20.15% | 19.88% | 20.09% | 19.25% |
| 2 | 9.81% | 10.39% | 10.15% | 11.70% | 11.53% |
| 3 | 9.13% | 9.91% | 10.86% | 10.67% | 10.97% |
| 4 | 10.75% | 9.71% | 10.90% | 11.39% | 11.00% |
| 5 | 4.35% | 5.16% | 5.31% | 5.53% | 6.29% |
| 6-9 | 21.15% | 21.87% | 22.18% | 21.56% | 20.43% |
| 16-17 | 16.48% | 16.02% | 16.08% | 16.16% | 15.60% |
| Unknown | 9.99% | 6.78% | 4.64% | 2.90% | 4.93% |
| Grand Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

## General category vessels

Since 2001, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices (Table 63 and Table 64). This additional effort was likely a contributing factor to why the FMP has been exceeding the fishing mortality targets.

**Table 63. General category landings before and after Amendment 11 implementation**

| Fishyear | General category scallop landings (Million lb.) | % of Total Scallop Landings |
|---|---|---|
| 1994 | 0.2 | 1.0% |
| 1995 | 0.1 | 0.8% |
| 1996 | 0.2 | 1.4% |
| 1997 | 0.4 | 2.7% |
| 1998 | 0.2 | 1.5% |
| 1999 | 0.2 | 0.7% |
| 2000 | 0.4 | 1.1% |
| 2001 | 1.6 | 3.3% |
| 2002 | 1.1 | 2.2% |
| 2003 | 2.0 | 3.4% |
| 2004 | 3.2 | 4.9% |
| 2005 | 7.4 | 13.5% |
| 2006 | 6.9 | 12.0% |
| 2007 | 5.0 | 8.8% |
| 2008 | 4.5 | 8.6% |
| 2009 | 4.3 | 7.5% |

Amendment 11 implemented a limited entry program for the general category fishery allocating 5% of the total projected scallop catch to the general category vessels qualified for limited access. The main objective of the action was to control capacity and mortality in the general category scallop fishery. There is also a separate limited entry program for general category fishing in the Northern Gulf of Maine. In addition, a separate limited entry incidental catch permit was adopted that will permit vessels to land and sell up to 40 pounds of scallop meat per trip while fishing for other species. During the transition period to the full-implementation of Amendment 11, the general category vessels were allocated 10% of the scallop TAC. Since the full implementation of Amendment 11 provisions did not occur until March 2010, it is too early to assess the impacts this amendment on the ownership patterns in the general category vessels. Table 64 shows, however, that the number of general category permits declined considerably after 2007 as a result of the Amendment 11 provisions. Although not all vessels with general category permits were active in the years preceding 2008, there is no question that the number of vessels (and owners) that hold a limited access general category permit under the Amendment 11 regulations are less than the number of general category vessels that were active prior to 2008 (Table 64).

**Table 64. General category permit before and after Amendment 11 implementation**

| AP_YEAR | Scallop landings (Million lb.) | Number of active General category vessels | | Number of permits qualify under Amendment 11 program | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | | | General category permit (up to 2008) | Limited access general category (A) | Limited access NGOM permit (B) | Incidental catch permit (C) | |
| 2000 | 0.37 | 212 | 2263 | | | | 2263 |
| 2001 | 1.58 | 290 | 2378 | | | | 2378 |
| 2002 | 1.11 | 315 | 2512 | | | | 2512 |
| 2003 | 1.95 | 348 | 2574 | | | | 2574 |
| 2004 | 3.16 | 433 | 2827 | | | | 2827 |
| 2005 | 7.40 | 611 | 2950 | | | | 2950 |
| 2006 | 6.90 | 661 | 2712 | | | | 2712 |
| 2007 | 4.96 | 495 | 2493 | | | | 2493 |
| 2008 | 4.55 | 428 | | 342 | 99 | 277 | 718 |
| 2009 | 4.69 | | | 404 | 136 | 331 | 871 |
| 2010* | | | | 316 | 120 | 294 | 730 |

* Preliminary

### 4.4.1.7 Trends in scallop landings by port communities

The landed value of scallops by port landing fluctuated from 1994 through 1998 for many ports. During the past five years, six ports brought in the most landed value: New Bedford, MA; Cape May, NJ; Newport News, VA; Barnegat Light/Long Beach, NJ, Seaford, VA, and Hampton, VA (Table 65). In addition to bringing in the most landed value, in 1994 scallop landings represented more than 30% of the total landed value for New Bedford, MA and Cape May, NJ, and more than 65% of the total landed value for Newport News and Hampton, VA (Table 66). This increased in 2008 to 74% and 84% for New Bedford, MA and Cape May, NJ, respectively, and 93% and 84% for Newport News and Hampton, VA, respectively.

Landed value has increased steadily from 1999-2008; but, some leveling off is apparent in recent years (Table 65). In the most recent two years of data (2007-2008), 43% of ports saw a decrease in the percentage of landed scallop value to total landed value (Table 66). However, many of these decreases are very small, on the order of 1-3%. Between 2003 and 2005, 10 ports increased their landed value for scallops, potentially from an increase in general category landings. The average landed value has increased from $2 million in 1994 to a peak of $12 million in 2005. In 2006-2008, the average landed value has hovered between $9 and $10 million.

**Table 65. Landed value of scallops (in thousands of dollars) by port of landing, FY 1994-2008.**
* Includes only ports of landings with landed value of scallops in excess of $100,000 during FY2008. X = confidential data, with landings that are greater than 100,000 but less than 1.25 million, X* = less than 70,000. Data run August 7, 2009, based on dealer weighout data YTD.

| Port and County | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| New Bedford MA (Bristol County) | 30981 | 36553 | 48436 | 45514 | 34687 | 70554 | 88491 | 80357 | 96011 | 104664 | 150121 | 206784 | 210517 | 211847 | 172603 |
| Cape May NJ (Cape May County) | 9360 | 8874 | 8656 | 6945 | 5588 | 9765 | 14158 | 18626 | 20237 | 28530 | 46530 | 51421 | 21619 | 45517 | 55522 |
| Newport News VA (Newport News City) | 9289 | 11917 | 13457 | 11173 | 11275 | 15207 | 23092 | 25535 | 30494 | 37361 | 48424 | 39467 | 22708 | 33363 | 37328 |
| Barnegat Light/Long Beach NJ (Ocean County) | 2653 | 2727 | 3007 | 3105 | 2693 | 3941 | 6733 | 6753 | 8071 | 10021 | 15641 | 21367 | 16651 | 16694 | 17275 |
| Seaford VA (York County) | 0 | 0 | 0 | 5553 | 4543 | 6540 | 11168 | 10465 | 11841 | 13043 | 18572 | 16364 | 11701 | 15340 | 14401 |
| Hampton VA (Hampton City) | 12425 | 7863 | 6346 | 3258 | 4557 | 5084 | 8289 | 9195 | 13803 | 19012 | 19978 | 14147 | 9180 | 15513 | 13620 |
| Fairhaven MA (Bristol County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5280 | 10103 | 8892 | 9166 |
| Point Pleasant NJ (Ocean County) | 315 | 532 | 1401 | 2207 | 1590 | 1854 | 3784 | 3197 | 3530 | 3973 | 3523 | 8574 | 7544 | 8751 | 8119 |
| Stonington CT (New London County) | 0 | 0 | 232 | 2573 | 2717 | 3302 | 3459 | 4944 | 5669 | 7463 | 10363 | 7402 | 4997 | 7680 | 5243 |
| Wildwood NJ (Cape May County) | 7 | 14 | X* | 0 | X* | 0 | 120 | 1246 | 2056 | 2194 | 3557 | 3942 | 2113 | 3690 | 3836 |
| Ocean City MD (Worcester County) | 11 | 24 | 43 | 5 | 15 | 25 | 118 | 79 | 99 | 212 | 174 | 4871 | 5631 | 2815 | 3504 |
| Point Lookout NY (Nassau County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 33 | X* | 1075 | 3001 |
| Avalon NJ (Cape May County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | 1563 | 3468 | 2808 |
| New London CT (New London County) | 0 | 0 | 0 | 0 | 0 | 843 | 817 | 943 | 886 | 1026 | 1203 | 1736 | 1465 | X | 2588 |
| Chatham MA (Barnstable County) | 0 | 0 | X* | 0 | 0 | 0 | X* | 588 | 117 | 409 | 1927 | 2996 | 3154 | 2056 | 1715 |
| Atlantic City NJ (Atlantic County) | 15 | 1 | 0 | 0 | 1 | 0 | 0 | X* | 0 | 0 | 382 | 2308 | 2048 | 2706 | 1518 |
| Other Connecticut (Not-Specified County) | 700 | 1665 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 1421 |
| Point Judith RI (Washington County) | 1 | 58 | 4 | 7 | X* | 242 | 734 | 596 | 83 | 274 | 622 | 4638 | 7358 | 2835 | 1371 |
| Montauk NY (Suffolk County) | X* | X* | X* | X* | 0 | 7 | 6 | 8 | 0 | 1 | 435 | 1367 | 1878 | 2187 | 1346 |
| Engelhard NC (Hyde County) | 0 | 0 | 0 | 0 | 0 | X* | X* | X* | 0 | 140 | 22 | 124 | 311 | 709 | 817 |
| Newport RI (Newport County) | 23 | 229 | 101 | 784 | 534 | 447 | 700 | X* | 3 | X* | 1382 | 8412 | 13070 | 6031 | 747 |
| Hampton Bays NY (Suffolk County) | X* | 5 | 5 | 22 | 6 | 53 | 426 | 454 | 94 | 155 | 533 | 1588 | 846 | 422 | 574 |
| Belford NJ (Monmouth County) | X* | X* | X* | 21 | X* | 3 | 2 | X* | X* | X* | X* | 33 | X* | 16 | 548 |
| Other Atlantic NJ (Atlantic County) | 387 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 134 | 874 | 1017 | 542 |
| Chincoteague VA (Accomack County) | 2 | 0 | X* | 0 | X* | 7 | 210 | 803 | 1115 | 1957 | 4058 | 11892 | 7253 | 1153 | 489 |
| New Haven CT (New Haven County) | 0 | 0 | X* | 0 | X* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X |
| Gloucester MA (Essex County) | X* | X* | 232 | 357 | 104 | 161 | 1014 | 1543 | 783 | 557 | 682 | 1217 | 890 | 487 | 352 |
| Sandwich MA (Barnstable County) | 23 | 37 | 284 | 128 | 243 | 213 | 157 | 218 | 249 | 266 | 136 | 243 | 403 | 707 | 337 |
| Provincetown MA (Barnstable County) | 45 | 24 | 92 | 97 | 114 | 57 | 120 | 2130 | 540 | 648 | 637 | 1684 | 1046 | 595 | 320 |
| Other Cape May NJ (Cape May County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X* | 0 | 0 | X* | 825 | 104 | X |
| Indian River DE (Sussex County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X* | 114 | 1 | 245 |
| Wellfleet MA (Barnstable County) | 0 | X* | X* | 70 | X* | 23 | X* | 66 | 32 | 112 | 47 | 284 | 64 | X* | 244 |
| Other Monmouth NJ(Monmouth County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X* | X | X | X |
| Hyannisport MA (Barnstable County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 648 | 473 | 262 | 222 |
| Addison ME (Washington County) | 0 | 0 | 0 | X | X | 0 | 0 | 0 | X | 0 | X | X | 49 | 268 | 151 |
| Nantucket MA (Nantucket County) | 5 | X* | 8 | X* | 1 | 0 | X | X* | X* | 2 | 58 | 282 | 187 | 195 | 129 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Harwich Port MA (Barnstable County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 590 | 110 | 318 | 462 | 770 | 115 | 171 | X |
| Wanchese NC (Dare County) | 0 | 0 | 0 | X* | 0 | 31 | 64 | 1350 | 1023 | 262 | 382 | 75 | 127 | X* | X |
| Shinnecock Hills NY (Suffolk County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X* | 317 | 210 | 44 | 118 |
| Bucks Harbor ME (Washington County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | X | 0 | 111 |
| Barnstable MA (Barnstable County) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 184 | 607 | 326 | 108 |
| Falmouth MA (Barnstable County) | 0 | 0 | 0 | 0 | 0 | 0 | X* | 0 | X* | X* | X* | 71 | 36 | 235 | X |

**Table 66. Percentage of landed value of scallops to total landed value by port of landing, FY 1994-2006**

* Includes only ports of landings with landed value of scallops in excess of $100,000 during FY2008. Data run August 98, 2009, based on dealer weighout data YTD.

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

**Table 67. Landed Value of scallops, linked to Vessel Homeport, ranked by fishing year 2008.**
Table only includes ports with either more than $1M in 2008 landed value, or more than $250K in landed value with at least 10% port total scallops. X = confidential, less than 1M; XX = confidential, more than 1M. Data run, August 9, 2009.

| Port | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW BEDFORD | 28300 | 32429 | 39317 | 31568 | 25804 | 44363 | 59779 | 65845 | 79089 | 88962 | 126049 | 159634 | 145917 | 156801 | 145392 |
| CAPE MAY | 6979 | 7453 | 7528 | 7957 | 5876 | 10546 | 16725 | 17891 | 23178 | 30267 | 46347 | 63443 | 59236 | 72497 | 62532 |
| NEWPORT NEWS | 1840 | 2250 | 2547 | 3263 | 3495 | 9017 | 12438 | 14089 | 16328 | 16788 | 22516 | 24306 | 20803 | 21774 | 18929 |
| BARNEGAT LIGHT | 3041 | 3370 | 3297 | 2821 | 2335 | 4406 | 6676 | 6978 | 7811 | 9853 | 15276 | 19351 | 15873 | 16626 | 16503 |
| NORFOLK | 14803 | 15818 | 16234 | 14093 | 10970 | 14765 | 18015 | 14287 | 16563 | 17464 | 20074 | 13893 | 11111 | 12474 | 11390 |
| NEW BERN | X | X | X | X | 837 | 2322 | 2650 | 3292 | 4235 | 6431 | 7885 | 7747 | 8314 | 12106 | 10785 |
| WANCHESE | 46 | 14 | 3 | 1 | 485 | 1 | 816 | 2769 | 3378 | 4401 | 5707 | 6652 | 4990 | 7053 | 6559 |
| NEW LONDON | 0 | 0 | 0 | 0 | 0 | 0 | X | 0 | 0 | X | X | 2296 | 4389 | 3131 | 5799 |
| FAIRHAVEN | 2708 | 3245 | 4453 | 4318 | 3720 | 6776 | 11794 | 6628 | 7133 | 7214 | 9021 | 10669 | 8406 | 7503 | 5415 |
| POINT PLEASANT | 953 | 977 | 1179 | 1504 | 1016 | 1386 | 2232 | 2374 | 2588 | 2938 | 3896 | 6835 | 6441 | 5532 | 5043 |
| LOWLAND | 6 | 120 | 445 | 0 | X | 963 | 1466 | 1786 | 2176 | 2897 | 3834 | 6114 | 4439 | 4579 | 4692 |
| SEAFORD | X | X | X | 0 | 0 | 0 | 0 | X | 2399 | 3452 | 3874 | 4551 | 2693 | 5540 | 4603 |
| STONINGTON | 0 | 1 | 0 | 536 | 73 | 0 | X | 698 | 1471 | 852 | 1270 | 3 | 59 | 464 | 4337 |
| HAMPTON | 4113 | 4413 | 4001 | 3014 | 2602 | 3704 | 4998 | 4103 | 4318 | 3742 | 6815 | 3576 | 5424 | 5213 | 4030 |
| ATLANTIC CITY | X | X | X | X | X | 0 | X | X | 0 | 2 | 96 | 3657 | 3484 | 3945 | 3154 |
| ORIENTAL | X | X | 174 | X | 890 | 1627 | 1776 | 1260 | 2059 | 3688 | 4397 | 7161 | 4572 | 4333 | 3151 |
| POINT PLEASANT BEACH | X | 0 | 0 | 0 | 0 | X | X | X | X | X | 456 | 1147 | 720 | 1589 | 2725 |
| CAPE CANAVERAL | X | X | X | X | X | X | X | X | XX | 1673 | 2380 | 3651 | 2574 | 2260 | 2441 |
| MONTAUK | X | 0 | X | 1 | 0 | 3 | 65 | 19 | 6 | X | 116 | 1206 | 386 | 2535 | 2386 |
| BEAUFORT | 42 | X | X | X | 0 | X | X | 244 | 256 | 67 | 289 | 1953 | 855 | 1473 | 2240 |
| BARNSTABLE | 2227 | 1968 | 1368 | 650 | 396 | 384 | 891 | 939 | 970 | 798 | 1152 | 2017 | 2649 | 2476 | 2164 |
| CARROLLTON | X | X | X | X | X | XX | XX | XX | XX | XX | XX | XX | XX | XX | XX |
| WILDWOOD | 4 | 5 | 149 | X | X | X | 805 | 1001 | 843 | 792 | 1855 | 2464 | 1559 | 1952 | 1776 |
| GLOUCESTER | 171 | 11 | 317 | 372 | 251 | 986 | 636 | 597 | 757 | 846 | 1681 | 2262 | 1654 | 1387 | 1449 |
| BAYBORO | X | X | X | X | X | X | X | 671 | 998 | 1512 | 2141 | 809 | 1235 | 1643 | XX |
| BEDFORD | X | X | X | X | X | X | X | XX | X | XX | XX | XX | XX | XX | XX |
| BOSTON | 265 | 334 | 454 | 454 | 162 | 449 | 512 | 706 | 880 | 1021 | 639 | XX | 1037 | 719 | XX |
| CHATHAM | 0 | 0 | 0 | 0 | 0 | X | 0 | 296 | 42 | 273 | 478 | 1285 | 1557 | 1723 | 1120 |
| MANAHAWKIN | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | XX | XX | XX | XX |
| SOUTHWEST HARBOR | 168 | 405 | 521 | 482 | 282 | 763 | 1086 | 590 | 529 | 674 | X | XX | XX | XX | XX |
| TREMONT | X | X | X | 338 | 226 | X | X | X | 554 | 787 | 1051 | XX | XX | XX | X |
| AURORA | X | X | X | X | X | X | X | X | X | XX | XX | XX | XX | XX | X |
| SUFFOLK | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X |
| PLYMOUTH | X | X | X | 66 | 12 | X | X | X | 126 | X | 253 | 1568 | 845 | 1678 | 960 |
| NEWPORT | X | X | X | X | X | X | X | X | X | X | X | X | 891 | X | X |
| OCEAN CITY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | 0 | X | X | X | X | X |
| KEY WEST | X | 0 | 0 | X | 0 | 0 | 0 | 0 | X | X | X | X | X | X | X |
| JACKSONVILLE | X | 0 | 0 | X | X | X | X | X | X | 0 | X | 1414 | XX | X | X |
| TILGHMAN ISLAND | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 590 | 859 | 483 | 800 |
| OWLS HEAD | X | 235 | 87 | X | X | X | X | 516 | 395 | 371 | 347 | 682 | 487 | 239 | 745 |
| OCEAN CITY | X | 11 | 1 | X | 0 | X | 7 | 23 | 27 | 14 | 583 | 1906 | 1887 | 737 | 725 |
| HAMPTON BAYS | 3 | 4 | 19 | 7 | 5 | 7 | 320 | 307 | 42 | 80 | 398 | 1235 | 763 | 379 | 509 |
| WESTPORT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 420 | 491 | 555 | 421 |
| SWAN QUARTER | 0 | 0 | X | X | X | X | 827 | X | X | 749 | 1509 | 2775 | 941 | 444 | 404 |
| PROVINCETOWN | 15 | 27 | 72 | 86 | 36 | 72 | 96 | 1867 | 352 | 351 | 391 | 1495 | 932 | 811 | 381 |
| TOMS RIVER | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X | X | 0 | X | X | X |
| NANTICOKE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X | X |
| POINT LOOKOUT | 0 | 0 | X | X | 0 | X | 0 | 0 | 0 | 0 | 19 | X | X | X | X |
| GLOUCESTER POINT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X |
| GALLOWAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X |
| SCRANTON | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X | X | X | X |
| BELMAR | X | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 187 | 250 | X | X |
| HULL | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | X | X | X | X | X | X |
| NEW YORK | 0 | 0 | 0 | X | 0 | X | X | X | X | X | X | 0 | X | 0 | X |

The largest numbers of permitted limited access scallop vessels currently are in the ports of New Bedford, MA and Cape May, NJ, which represent 37% and 19% of the total, respectively (Table 68). Of the 348 permitted limited access vessels in 2009, 203 originate from New Bedford, MA and Cape May, NJ. Although the number of permitted limited access vessels has only increased from 308 in 1994 to a peak of 380 in 2005 and New Bedford has always had the largest number of permitted limited access vessels, the port with the next greatest number of contributors shifted from Norfolk, VA (18% in 1994 to 3% in 2009) to Cape May, NJ (9% in 1994 to 19% in 2009).

In addition to having the greatest number of permitted limited access scallop vessels, New Bedford, MA also has the greatest number of general category scallop vessels. Cape May, NJ, Barnegat Light, NJ, and Gloucester, MA also have high numbers of general category scallop vessels. Generally, ports that had a higher number of general category scallop vessels from 1994-2004, such as New Bedford, Gloucester, and Chatham, have seen a significant decrease in these vessels in recent years (Table 69).

Although the largest increases in general category vessels have been from ports in NC, they have increased from 1 or no permitted general category scallop vessels to only about 6 or 7, which results in a 600-700% increase. Regardless of this increase, these ports only had a landed value for scallops of $311,000 or less (Table 65). Other ports that saw an increase of 300% in general category vessels, such as Chincoteague, VA and Barnegat Light, NJ (Table 69), had a landed value of $7.3 million and $16.9 million, respectively (Table 65). Although some ports such as New Bedford and Gloucester have experienced a decline in the number of general category scallop vessels, the simultaneous increase in permitted limited access boats has aided to increase the landed value of scallops in those ports to $202.5 million and $812,000 respectively. As Table 69shows, the general category fleet is not homogeneous, but varies over space and time, with some ports showing a general category fleet that mirrors limited access vessels in size (for example Atlantic City NJ), and others showing a fleet of smaller-scale vessels (such as Fairhaven, MA). Thus impacts to the general category fishery as a whole can be experienced differently in different ports.

**Table 68. Permitted limited access scallop vessels, by homeport, 1994-2009.**

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

**Table 69. Permitted general category scallop vessels, by homeport, 2005-2009. All ports that had at least 1 GC permit in 2009 are included.**

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

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

**Table 70. Average GRT (gross registered tons), average length, and number of permitted scallop vessels by top 20 homeports, 1994-2008.**

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

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

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

## 4.5 NON-TARGET SPECIES

Non-target species (or 'bycatch') include species caught by scallop gear that are not landed, including small scallops. The impacts of the scallop fishery on bycatch have been minimized to the extent practicable. Amendment 10 analyzed the impacts of new management measures (ring size, larger twine top, open area DAS, etc.) on bycatch, relying mainly on recent gear surveys and the general relationship between total area swept and bycatch. In general, the larger twine top mesh allowed greater escapement of many but not all finfish species with minor losses of sea scallop catch (particularly in areas having larger scallops). The effects of the increase to a 4" minimum ring size were assessed for various species observed in field trials, but the major effect came from a greater efficiency in catching scallops over 110-120 mm. Efficiency was forecast to increase by about 10-15%, reducing area swept by the same amount. Since most species were caught incidentally less frequently in dredges with larger rings and efficiency improved in most areas, Amendment 10 estimated that bycatch would decline, particularly in areas having most scallops larger than 110-120 mm. The increase to a minimum 4" ring in all areas occurred in December 2004. Amendment 10 also estimated that the reductions in open area DAS would reduce total area swept and increase scallop LPUE, particularly for larger scallops in the long-term. Appendix IX of Amendment 10 details scallop and finfish bycatch estimates in the scallop fishery (http://www.nefmc.org/scallops/index.html).

Framework 16/39 estimated the total bycatch of many finfish species from observed trips taken in controlled access areas. It also estimated the amount of sampling needed in each area to estimate the total bycatch of a given species with various levels of precision. In general, rotational area management is designed to improve and maintain high scallop yield, while minimizing impacts on groundfish mortality and other finfish catches. Access programs may even reduce fishing mortality for some finfish species, because the total amount of fishing time in access areas is very low compared with fishing time in open areas due to differences in LPUE. See Sections 6.1.1.2 and 6.1.1.3 of Framework 16/39 for more information about the expected impacts on bycatch from that action. Catches of regulated species in the access areas were expected to be less than 10% of the overall TAC in the Multispecies FMP. This amount is less than the level that the Groundfish PDT identified as having possible repercussions for meeting the groundfish mortality targets and affecting the rebuilding of overfished groundfish stocks.

#### 4.5.1.1 Species caught incidentally in the scallop fishery

To identify potential non-target species caught incidentally in the scallop fishery, the Scallop PDT considered discard info from the 2008 SBRM report, Wigley et al. 2008, and various assessments such as GARM III and the Skates Data-poor Workshop (Table 71). A note of caution in using the 2008 SBRM data was that it was not extrapolated out to the entire fishery. Therefore, fisheries with higher observer coverage, such as the scallop fishery, appeared to have more bycatch than other fisheries.

Based on the 2008 SBRM report in which 2007-2008 data was compiled, the species with more than 5% of total estimated catch from discards in the scallop fishery are: fluke, winter flounder, monkfish, barndoor skate, little skate, unidentified skate, surfclams, and ocean quahog. These species were narrowed down by looking at the report presented by Wigley et al. (2008). While it is based on 2005 data, it is extrapolated out across fisheries such that a consistent conclusion can be made. Based on this report, the PDT identified the following species as having more than 5% of total estimated catch from discards in the scallop fishery: monkfish, skate (overall), and windowpane flounder (Table 71).

In addition to the snapshot of information available from the 2008 SBRM process and Wigley et al. (2008), the PDT also reviewed discard info for the scallop fishery in recent assessments for the species listed above. GARM III for multispecies identified that the scallop fishery caught more than 5% of the bycatch (compared to overall catch) for some species by region (Table 72). Georges Bank (GB) and Southern New England (SNE) yellowtail flounder were caught in amounts greater than 5%, but Cape Cod yellowtail only has occasional spikes over 5%. GB winter flounder has catch over 5%, but neither SNE nor Gulf of Maine (GOM) winter flounder is caught appreciably. Although there is greater than 5% caught in both the GB/GOM and SNE regions for windowpane flounder, the catch is generally higher in SNE. The Skate Data-poor Working Group identified the greatest bycatch for the scallop fishery as little and winter skates. Lastly, when extrapolated out across the entire fishery, the ocean quahog and surfclam assessments show close to zero bycatch of these species by the scallop fishery.

**Table 71 – Summary of discards by species in scallop gear types (Based on 2005 observer data presented in Wigley et al. 2008). All values in live mt.**

| Species | Fishery Landings + discards | Scallop Fishery Total | Scallop Overall Percent | |
|---|---|---|---|---|
| Bluefish | 3,058 | 0 | 0 | |
| Atlantic Herring | 100,071 | 0.05 | 0.0 | |
| Atlantic Salmon | 0 | 0 | | |
| Deep Sea Red Crab | 2,117 | 0.14 | 0.0 | * |
| Atl. Sea Scallop | 219,901 | 5767.33 | 2.6 | |
| Atl. Mackerel | 43,780 | 1.42 | 0.0 | |
| Illex Squid | 13,623 | 1.61 | 0.0 | ** |
| Loligo Squid | 17,890 | 3.48 | 0.0 | ** |
| Butterfish | 1,422 | 0.14 | 0.0 | |
| Monkfish | 23,154 | 2563.1 | 11.1 | |
| Atl. Cod | 7,182 | 2.63 | 0.0 | |
| Haddock | 8,121 | 3.54 | 0.0 | |
| Yellowtail Flounder | 4,803 | 229.07 | 4.8 | |
| American Plaice | 1,652 | 8.35 | 0.5 | |
| Witch Flounder | 2,940 | 48.63 | 1.7 | |
| Winter Flounder | 4,026 | 118 | 2.9 | |
| Pollock | 6,580 | 0.03 | 0.0 | |
| Acadian Redfish | 648 | 0.32 | 0.0 | |
| White Hake | 2,809 | 5.43 | 0.2 | ** |
| Windowpane Flounder | 935 | 164.81 | 17.6 | |
| Atl. Halibut | 31 | 0.01 | 0.0 | |
| Ocean Pout | 161 | 4.44 | 2.8 | |
| Silver Hake | 10,257 | 17.34 | 0.2 | |
| Offshore Hake | 24 | 0 | 0 | ** |
| Red Hake | 1,959 | 61.72 | 3.2 | ** |
| Skates | 50,168 | 10697.41 | 21.3 | |
| Spiny Dogfish | 5,489 | 47.07 | 0.9 | |
| Summer Flounder | 9,005 | 381.53 | 4.2 | |
| Scup | 4,815 | 1.47 | 0.0 | |
| Black Sea Bass | 1,395 | 4.76 | 0.3 | |
| Atlantic Surfclam | 140,886 | 13.55 | 0.0 | * |
| Ocean Quahog | 113,857 | 57.48 | 0.1 | * |
| Tilefish | 706 | 0 | 0 | |

** These species have gear-specific, directed fisheries that were not observed in 2005*

*** Potential "mixed" species: squid unknown, and red, offshore, and white hake mix.*

*shaded – greater than 5% of total bycatch comes from scallop fishery*

**Table 72 – Summary of discards by species in scallop gear types (Based GARM III analyses, except for skates). All values in live mt.**

| Species | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GB Yellowtail flounder | 9.6 | 14.1 | 23.6 | 16.4 | 0.8 | 1.1 | 8.0 | 1.3 | 5.2 | 15.9 | 7.7 |
| SNE Yellowtail flounder | 17.0 | 11.8 | 9.9 | 9.4 | 1.5 | 2.3 | 10.6 | 3.1 | 18.5 | 19.2 | 23.0 |
| CC/GOM Yellowtail flounder | 21.0 | 14.1 | 1.9 | 1.0 | 3.7 | 0.6 | 1.2 | 1.4 | 0.4 | 0.6 | 5.4 |
| GB Winter flounder | 4.8 | 3.5 | 3.7 | 2.6 | 0.4 | 0.7 | 0.1 | 0.2 | 4.0 | 6.9 | 13.2 |
| GB/GOM Windowpane flounder | 19.5 | 10.5 | 5.6 | 6.0 | 9.9 | 12.7 | 3.0 | 2.2 | 1.8 | 11.1 | 9.4 |
| SNE Windowpane flounder | 44.4 | 28.4 | 23.6 | 9.9 | 3.9 | 18.2 | 15.8 | 10.5 | 32.8 | 15.6 | 17.9 |
| Skate Complex* | 41.3 | 19.0 | 35.3 | 20.4 | 13.7 | 26.3 | 23.1 | 15.2 | 17.8 | 20.4 | 20.5 |

** Data is from the Skate Data-poor Workshop*

#### 4.5.1.2 Groundfish Mortality Closed Areas and Yellowtail Flounder

The groundfish closed areas were originally established to reduce the effects of fishing on spawning cod and haddock, particularly within Closed Areas I and II. Peak spawning activity occurs from February to April, coinciding with the original seasonal closures. After spawning, these fish often disperse to other areas. Yellowtail flounder is another species that was intended to be protected by the groundfish closed areas. The Georges Bank stock is predominately found on the southeastern and northwestern portions of Georges Bank, overlapping the scallop access areas in Closed Areas I and II. Unlike spawning cod and haddock, however, yellowtail flounder tend to be present in these locations year around. The Southern New England stock of yellowtail flounder was one of the primary intended beneficiaries of the Nantucket Lightship Area. Most of this stock occurs in the portions of the Nantucket Lightship Area that will remain closed to scallop fishing, or in other areas of Southern New England and the Mid-Atlantic region where scallop fishing occurs in open areas. More details about the biological characteristics of groundfish species in the closed areas is provided in the FEIS for Amendment 13 to the Multispecies FMP.

Amendment 16 to the Multispecies FMP was recently approved by the Council and is currently under review by NMFS; it is expected to be implemented before May 1, 2010. This action identified a process for setting annual catch limits (ACLs) for all Groundfish species. A major sub-component of yellowtail flounder catch is incidental catch in the scallop fishery, most of which is discarded. Amendment 16 calls for this catch to be estimated and identified as an "other sub-component" in 2010 until accountability measures (AMs) are adopted through the scallop FMP under this action in 2011, at which point the sub-component will be considered a sub-ACL. This ACL will apply to all scallop fishery catches of yellowtail flounder, and the associated AMs are identified in Section 0.

Framework 44 to the GF plan considered this allocation and the proposed action allocates 100% of the projected GB and SNE/MA YT flounder ACL needed for the scallop fishery for FY2010 and 90% of what is needed for 2011 and 2012. These values recognize the importance of yellowtail flounder to the scallop fishery and provide an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. The values for 2011 and 2012 can be adjusted if there is new information regarding scallop and yellowtail stocks, or based on access area measures in the scallop fishery for those years. The Council decided not to have a separate allocation for the CC/GOM YT stock for the scallop fishery because estimated levels of catch from that stock are relatively low. This may be changed in the future if it is deemed necessary to include CC/GOM YT as part of the sub-ACL.

The Council approved FW44 at the November 2009 Council meeting, and it will be effective in 2010. The decision to allocate these amounts was based on an analysis of estimated incidental catch of YT in the scallop fishery and the associated impacts of various allocation alternatives on revenue in both the scallop and groundfish fisheries. Multispecies Framework 44 includes all the analyses related to this decision. Framework 44 also requires that all limited access vessels be required to land all legal-sized yellowtail flounder.

The Scallop and GF PDTs estimated the incidental catch of yellowtail flounder in the scallop fishery in 2010-2012 for Council action on MS Framework 44. At the September 2009 Council meeting staff presented the amount of YT needed to harvest scallop yield based on the ratio of yellowtail discards to scallop kept catches for the four scallop rotational management scenarios in this action, which will set measures for FY2010 only. More information on the allocations for the coming fishing years is given in Section 4.5.2 of Scallop Framework 21.

This action recommends stock-wide ACLs for YT be applied to the full stock area, and AMs applied to open areas rather than access areas. Specifically, access area programs within YT stock areas should proceed as allocated and no vessel should be shut out of access areas if a sub-ACL for YT is reached during the year. One goal of the Scallop FMP is to keep scallop fishing in areas with high catch per unit of effort, so if the total YT sub-ACL is exceeded, open area DAS in that stock area should be limited or reduced to account for any overages. Overages should not be accounted for in access areas and AMs that affect access area fishing are not preferred. With current monitoring systems, a YT sub-ACL AM may need to be in subsequent fishing years, not in-season. However, both types of AMs are considered in this action. Currently this sub-ACL is for the entire scallop fishery – both LA and LAGC -- there are no alternatives that would further divide the sub-ACL allocated to the scallop fishery.

The preferred alternative for yellowtail flounder AM in this action incorporates a seasonal closure of a portion of the stock area pre-identified as having high bycatch, either in-season or in Year 3.

#### 4.5.1.3 Observer set-aside program

The scallop fishery is the only fishery in the Northeast that already has a resource or industry-funded observer program in place. Since 1999, the majority of observer coverage in the scallop fishery has been funded through the scallop observer set-aside program. A percentage of the total allowable catch (TAC) in access areas has been deducted before allocations are made to generate funding for vessels required to carry an observer. Amendment 10 extended that requirement to open areas as well, so a percent of potential allocated effort in DAS from open areas is set-aside to help fund the program. Observer coverage is necessary in the scallop fishery to monitor bycatch of finfish and to monitor interactions with endangered and threatened species. Vessels required to carry an observer are authorized to land more than the possession limit from trips in access areas, and in open areas vessels are charged a reduced amount to help compensate for the cost of an observer.

In 2008 and 2009, a total of 629 trips and 404 trips, respectively, were observed on both limited access and general category vessels from the observer set-aside program (Table 73, 2009 numbers are through 11/30/09). This is equivalent to roughly 3600 sea days in 2008 and 2700 sea days in 2009 observed through this program. An additional 96 (in 2008) and 58 (in 2009) sea days were observed and paid for fully with federal funds.

**Table 73 – Summary of observed trips in the scallop fishery from observer set-aside program**

| | **2008** | | **2009** (as of 11/30/09) | |
|---|---|---|---|---|
| | **Trips** | **DAS** | **Trips** | **DAS** |
| ***Elephant Trunk*** | *4 trips allocated* | | *3 trips allocated* | |
| Limited Access | 213 | 1752 | 90 | 799 |
| General Category | 150 | 246 | 116 | 213 |
| ***Delmarva*** | *Closed* | | *1 trip allocated* | |
| Limited Access | Closed | | 21 | 247 |
| General Category | Closed | | 35 | 68 |
| ***Closed Area II*** | *Closed* | | *1 trip* | |
| Limited Access | Closed | | 23 | 191 |
| General Category | Closed | | N/A – no trips allocated | |
| ***Nantucket Lightship*** | *1 trip allocated* | | *Closed* | |
| Limited Access | 34 | 244 | Closed | |
| General Category | 106 | 193 | Closed | |
| ***Open Areas*** | *35 DAS allocated* | | *37 DAS allocated* | |
| Limited Access | 126 | 1195 | 119 | 1200 |
| General Category | N/A – not part of set-aside program | | N/A – not part of set-aside program | |
| ***TOTAL*** | ***675*** | ***3726*** | ***404*** | ***2718*** |
| **Limited Access** | **373** | **3191** | **253** | **2437** |
| **General Category** | **256** | **436** | **151** | **281** |
| Additional non-RSA federally funded days (GC Open Area) | 46 | 96 | 38 | 58 |

## 4.6 OTHER FISHERIES

### 4.6.1.1 Other fisheries scallop vessels are involved in

The Amendment 15 alternatives could potentially have impacts on other fisheries in cases where scallop permit holders also hold other permits. Boats in both the general category and limited access fleets have permits in other fisheries, though the extent is greater in the LAGC fleet.

The scallop fishery is year round and extends from Maine to North Carolina. Therefore, the potential impacts on other fisheries depend on where vessels are generally homeported, and the amount of time their vessel has to engage in other fisheries. In recent years scallop vessels have reduced the amount of time they are targeting scallops. Days fished have been dramatically reduced since limited entry was adopted with a DAS system in 1994. Furthermore, since area rotation was formally established in 2004, DAS-used have reduced even further (See Table 84 in Section 5.4.3).

Table 74 lists the permits held in other fishery management plans (FMPs) by scallop limited access (LA) permit holders, and Table 75 gives those for the LAGC separated out by permit category. It is clear from these tables that the majority of LA and LAGC vessels have permits in several fisheries other than scallops including monkfish, multispecies, summer flounder and skates just to name a few. Not all of the LA and LAGC vessels with multiple fishery permits were active in those fisheries, however. For the full-time and part-time LA vessels, monkfish (242 FT, 28 PT vessels active in 2009) and summer flounder (68 FT, 22 PT vessels active in 2009) were the top fisheries with the highest rate of participation, followed by sea bass and squid fisheries which have considerably less participation especially by the FT vessels (Table 76 and Table 77). The same is true for LAGC vessels except that their activity is distributed in a wider range of fisheries including multispecies, lobster, squid, scup and small mesh fisheries (Table 78 and Table 79).

**Table 74. Other Fishery Management Plan permits held FY 2009, by scallop limited access boats.**

| Plan | # held | % |
|---|---|---|
| BLUEFISH | 317 | 91 |
| BLACK SEA BASS | 141 | 41 |
| DOGFISH | 333 | 96 |
| SUMMER FLOUNDER | 294 | 85 |
| HERRING | 284 | 82 |
| LOBSTER | 223 | 64 |
| MULTISPECIES | 331 | 95 |
| MONKFISH | 341 | 98 |
| OCEAN QUAHOG | 285 | 82 |
| SCALLOP-LA | 347 | 100 |
| SCALLOP-LAGC | 180 | 52 |
| SCUP | 133 | 38 |
| SURF CLAM | 282 | 81 |
| SMB | 326 | 94 |
| RED CRAB | 268 | 77 |
| SKATE | 310 | 89 |
| TILEFISH | 301 | 87 |

**Table 75. Other Fishery Management Plan permits held FYI 2009, by scallop LAGC boats, separated by permit category.**

| | CAT A: IFQ | | CAT B: NGOM | | CAT C: Incidental | |
|---|---|---|---|---|---|---|
| **Plan** | **# held** | **%** | **# held** | **%** | **# held** | **%** |
| SCALLOP-LAGC | 284 | 100 | 113 | 100 | 278 | 100 |
| BLUEFISH | 254 | 89 | 103 | 91 | 245 | 88 |
| BLK S. BASS | 100 | 35 | 26 | 23 | 138 | 50 |
| DOGFISH | 254 | 89 | 107 | 95 | 262 | 94 |
| SMR FLOUNDER | 162 | 57 | 45 | 40 | 207 | 74 |
| HERRING | 225 | 79 | 106 | 94 | 237 | 85 |
| LOBSTER | 166 | 58 | 89 | 79 | 199 | 72 |
| MULTISPECIES | 241 | 85 | 106 | 94 | 255 | 92 |
| MONKFISH | 269 | 95 | 106 | 94 | 265 | 95 |
| OCEAN QUAHOG | 182 | 64 | 59 | 52 | 215 | 77 |
| SCALLOP-LA | 40 | 14 | 27 | 24 | 113 | 41 |
| SCUP | 109 | 38 | 32 | 28 | 146 | 53 |
| SURF CLAM | 178 | 63 | 61 | 54 | 217 | 78 |
| SMB | 244 | 86 | 100 | 88 | 252 | 91 |
| RED CRAB | 196 | 69 | 79 | 70 | 219 | 79 |
| SKATE | 256 | 90 | 100 | 88 | 249 | 90 |
| TILEFISH | 220 | 77 | 85 | 75 | 245 | 88 |

In order to investigate how behavior might change with alternatives in this document and what impact they could have, it is necessary to know what the major controls are for each fishery and how the plan works for vessels with LA and LAGC scallop permits in those fisheries. The type of effort controls and management scheme will play a role in determining the potential magnitude of potential impacts from this action.  For example, the surf clam fishery is an ITQ managed fishery, so even if a vessel with a clam permit leased all scallop effort they can't increase their clam catch beyond what they have quota for.  However, some of the other fisheries are managed by hard TACs, so it is conceivable that if a scallop vessel got rid of the scallop effort it could increase effort in other fisheries and land more of these TAC managed species than it currently is; potentially having negative impacts on other vessels in these fisheries.

Table 80 lists the main management measures for all FMPs that have permits on scallop vessels.

When assessing potential impacts, it is also important to get a sense of how catch has been in these fisheries. If the TACs in a plan are reached or close every year, an increase in effort brought about by stacking and leasing measures is more likely to have an impact than if the fishery is seldom near the allotted catch. A rough description of fishery catch levels in relation to their respective controls are provided for fisheries that have catch information readily available in Table 81.

**Table 76. Number of Full-time vessels with landings of corresponding species (includes fisheries with 5 or more vessels participating)**

| Species | 2005 | 2006 | 2007 | 2008 | 2009 | 2010* |
|---|---|---|---|---|---|---|
| MONKFISH (ANGLER) | 251 | 257 | 277 | 277 | 242 | 204 |
| BLUEFISH | 25 | 24 | 20 | 21 | 18 | 8 |
| BUTTERFISH | 5 | 6 | 12 | 13 | 13 | 3 |
| COD | 13 | 14 | 6 | 8 | 7 | 6 |
| CROAKER, ATLANTIC | 8 | 6 | 6 | 14 | 9 | 4 |
| FLOUNDER, AM. PLAICE | 14 | 10 | 5 | 6 | 8 | 6 |
| FLOUNDER, SUMMER | 79 | 86 | 82 | 66 | 68 | 56 |
| FLOUNDER, WINTER | 24 | 29 | 37 | 22 | 14 | 9 |
| FLOUNDER, WITCH | 17 | 17 | 12 | 11 | 15 | 6 |
| FLOUNDER, YELLOWTAIL | 18 | 15 | 14 | 10 | 17 | 48 |
| HADDOCK | 13 | 10 | 6 | 7 | 6 | 6 |
| LOBSTER | 21 | 12 | 12 | 11 | 11 | 11 |
| SCALLOP, SEA | 304 | 312 | 316 | 308 | 308 | 301 |
| SCUP | 18 | 17 | 16 | 20 | 16 | 23 |
| SEA BASS, BLACK | 28 | 26 | 24 | 26 | 24 | 16 |
| SKATES(HEADS) | 12 | 8 | 5 | 7 | 6 | 6 |
| SQUID (LOLIGO) | 31 | 31 | 19 | 27 | 22 | 10 |
| WEAKFISH, SQUETEAGUE | 12 | 13 | 16 | 12 | 7 | 5 |

*2010 numbers are preliminary

**Table 77. Number of Part-time and occasional vessels with landings of corresponding species (includes fisheries with 5 or more vessels participating)**

| Species | 2005 | 2006 | 2007 | 2008 | 2009 | 2010* |
|---|---|---|---|---|---|---|
| ANGLER | 28 | 35 | 29 | 28 | 28 | 24 |
| BLUEFISH | 11 | 17 | 11 | 11 | 15 | 3 |
| BUTTERFISH | 7 | 8 | 9 | 8 | 6 | 2 |
| CROAKER, ATLANTIC | 6 | 8 | 8 | 5 | 6 | 2 |
| FLOUNDER, SUMMER | 24 | 27 | 25 | 20 | 22 | 21 |
| MACKEREL, ATLANTIC | 6 | 7 | 7 | 5 | 6 | 7 |
| SCALLOP, SEA | 32 | 36 | 34 | 32 | 34 | 34 |
| SCUP | 12 | 15 | 14 | 8 | 13 | 15 |
| SEA BASS, BLACK | 19 | 19 | 20 | 17 | 15 | 16 |
| SQUID (LOLIGO) | 17 | 20 | 19 | 15 | 15 | 5 |
| WEAKFISH, SQUETEAGUE | 7 | 11 | 9 | 8 | 7 | 4 |

*2010 numbers are preliminary

**Table 78. Number of LAGC-IFQ vessels with landings of corresponding species (includes fisheries with 10 or more vessels participating in 2008)**

| Species | 2008 | 2009 | 2010* |
|---|---|---|---|
| SCALLOP, SEA | 229 | 247 | 168 |
| MONKFISH | 210 | 222 | 167 |
| FLOUNDER, SUMMER | 122 | 120 | 110 |
| FLOUNDER, WINTER | 92 | 74 | 59 |
| LOBSTER | 88 | 75 | 61 |
| COD | 84 | 74 | 70 |
| FLOUNDER, YELLOWTAIL | 80 | 76 | 70 |
| SKATES(HEADS) | 80 | 76 | 59 |
| FLOUNDER, WITCH | 79 | 66 | 61 |
| HADDOCK | 70 | 62 | 53 |
| FLOUNDER, AM. PLAICE | 69 | 66 | 52 |
| BLUEFISH | 66 | 81 | 51 |
| POLLOCK | 63 | 56 | 46 |
| SEA BASS, BLACK | 61 | 55 | 55 |
| SQUID (LOLIGO) | 59 | 64 | 45 |
| HAKE, WHITE | 57 | 51 | 45 |
| FLOUNDER, SAND-DAB | 52 | 43 | 7 |
| HAKE, SILVER | 52 | 54 | 41 |
| WOLFFISHES | 50 | 38 | 15 |
| SCUP | 44 | 48 | 56 |
| HALIBUT, ATLANTIC | 41 | 38 | 23 |
| BUTTERFISH | 40 | 58 | 36 |
| REDFISH | 39 | 43 | 35 |
| WEAKFISH, SQUETEAGUE | 37 | 42 | 20 |
| CUSK | 35 | 33 | 27 |
| DOGFISH SPINY | 33 | 59 | 28 |
| SKATE, WINTER(BIG) | 33 | 44 | 34 |
| BASS, STRIPED | 27 | 15 | 10 |
| CROAKER, ATLANTIC | 26 | 35 | 13 |
| HAKE, RED | 26 | 28 | 23 |
| DOGFISH SMOOTH | 25 | 38 | 27 |
| MACKEREL, ATLANTIC | 22 | 33 | 19 |
| EEL, CONGER | 17 | 15 | 13 |
| WHITING, KING | 15 | 25 | 5 |
| SEA ROBINS | 14 | 17 | 10 |
| TAUTOG | 14 | 9 | 9 |
| HERRING, ATLANTIC | 13 | 12 | 15 |
| JOHN DORY | 12 | 8 | 7 |
| WHELK, CHANNELED | 12 | 14 | 12 |
| TILEFISH, GOLDEN | 11 | 10 | 15 |

**Table 79. Number of LAGC-NGOM vessels with landings of corresponding species (includes fisheries with 10 or more vessels participating in 2009)**

| Species | 2008 | 2009 | 2010* |
|---|---|---|---|
| ANGLER | 69 | 80 | 66 |
| COD | 51 | 65 | 54 |
| FLOUNDER, AM. PLAICE | 46 | 57 | 48 |
| FLOUNDER, WITCH | 48 | 56 | 44 |
| HADDOCK | 49 | 54 | 44 |
| POLLOCK | 47 | 54 | 43 |
| HAKE, WHITE | 43 | 50 | 41 |
| FLOUNDER, WINTER | 38 | 48 | 38 |
| FLOUNDER, YELLOWTAIL | 37 | 48 | 49 |
| LOBSTER | 49 | 47 | 29 |
| REDFISH | 42 | 46 | 37 |
| WOLFFISHES | 45 | 46 | 19 |
| SCALLOP, SEA | 23 | 37 | 33 |
| HAKE, SILVER | 24 | 36 | 29 |
| CUSK | 33 | 35 | 26 |
| DOGFISH SPINY | 24 | 34 | 26 |
| SKATES(HEADS) | 22 | 31 | 29 |
| BLUEFISH | 13 | 26 | 14 |
| HALIBUT, ATLANTIC | 19 | 25 | 21 |
| SHRIMP (PANDALID) | 14 | 23 | 12 |
| FLOUNDER, SUMMER | 6 | 21 | 14 |
| MACKEREL, ATLANTIC | 11 | 18 | 3 |
| SEA BASS, BLACK | 5 | 17 | 10 |
| SQUID (LOLIGO) | 8 | 16 | 9 |
| FLOUNDER, SAND-DAB | 11 | 15 | 2 |
| SCUP | 5 | 13 | 12 |
| BUTTERFISH | 5 | 11 | 7 |

**Table 80. Summary of management measures for other FMPs with permits on scallop boats.**

| FMP | How Managed |
|---|---|
| BLUEFISH | The Atlantic bluefish fishery is managed by the Mid-Atlantic Fishery Management Council. This fishery utilizes an annual coastwide quota to manage the commercial and recreational fishing fleets. |
| BLACK SEA BASS | The commercial fishery is managed through an annual coastwide quota. Recreational regulations are generally the same in Federal and state waters. In cases where state and Federal regulations differ, federally permitted charter/party vessels are required to abide by the more restrictive measure. |
| DOGFISH | This open-access fishery utilizes an annual coastwide quota for commercial fisherman, split into two semi-annual periods, with daily possession limits designed to discourage a directed fishery. |
| SUMMER FLOUNDER | The annual coastwide commercial quota is allocated to the coastal states based upon percentage shares specified in the FMP. Recreational targets (in number of fish) are established by the Atlantic States Marine Fisheries Commission. |
| HERRING | The fishery is managed under a limited-access program, and utilizes an annual coastwide, total allowable catch (TAC), which is split into four area-specific TACs. When an area-specific TAC is reached, the directed fishery in that area is closed, and only incidental catches of herring area allowed. |
| LOBSTER | The fishery regulations control lobster trap fishing effort based on historic participation in three Lobster Management Areas (LMAs) including LMA 3, the offshore waters of the Exclusive Economic Zone (EEZ), and LMAs 4 and 5, the nearshore EEZ from New York to North Carolina. Federal lobster permit holders who intend to fish for lobster with trap gear during the fishing year are required to designate lobster management areas and tag all lobster traps. Federal lobster regulations require Federal permit holders to abide by the most restrictive of either state or Federal trap limits. |
| MULTISPECIES | This fishery is managed using a variety of management tools, including days-at-sea, special management programs, and sectors. |
| MONKFISH | The fishery is managed by means of a limited entry program where qualified participants are allocated a specified number of days-at-sea, trip limits (directed and incidental), a minimum size limit, and gear restrictions. |
| OCEAN QUAHOG | This fishery utilizes an individual transferable quota (ITQ) to regulate commercial fishing. |
| SCUP | The commercial fishery is managed by trimester (Winter I, Summer, Winter II) subquotas. The recreational scup fishery is managed under separate regulations for Federal and state waters. In cases where state and Federal regulations differ, federally permitted charter/party vessels are required to abide by the more restrictive measure. |
| SURF CLAM | This fishery utilizes an individual transferable quota (ITQ) to regulate commercial fishing. |
| Squid | These fisheries utilize annual coastwide quotas to manage fishing fleets and are harvested with small mesh trawl gear. The annual harvest quota for Loligo is divided into trimester allocations spaced throughout the fishing year. |
| Mackerel | This fishery utilizes an annual coastwide quota to manage commercial and recreational fishing fleets. Mackerel is a large volume fishery primarily harvested with mid-water trawl gear. |
| Butterfish | This fishery utilizes an annual coastwide quota to manage fishing fleets and is primarily harvested with small mesh trawl gear. Currently, there is not a directed fishery for butterfish. Instead, most butterfish are harvested as bycatch with squid. Because the butterfish stock was declared overfished, the Council is currently developing a rebuilding plan for butterfish. |
| RED CRAB | This fishery uses days-at-sea, an annual quota, and gear restrictions to manage the commercial fishing fleet. |
| SKATE | This index-based fishery is managed by both direct and indirect controls on skate fishing mortality, including possession limit restrictions, prohibitions on landing overfished species of skates and management measures in other fisheries that impact skates. |
| TILEFISH | This fishery uses an Individual Fishing Quota program to manage the commercial fishing fleet. |

**Table 81. Recent catch trajectories of FMPs with permits in the scallop fishery.**

| FMP | Current catch (2010) | 2009 catch |
|---|---|---|
| BLUEFISH | 44% quota | 61% |
| BLACK SEA BASS | 68% | 97% |
| DOGFISH | have been catching period quota | period quota caught |
| SUMMER FLOUNDER | 69%, quota transfer between states occurring | closed for year in MA; 91% caught overall |
| HERRING | area closures occurred | high, area closures occurring |
| SCUP | 57% | winter quota met in 2009, closure on 12/9/09 |
| SQUID | 61% Illex, 19% Loligo | 77% of annual quota Illex; 44% annual quota Loligo |
| MACKEREL | 10% | 23% |
| BUTTERFISH | recently declared overfished, recent closure | closed for year on 11/25/09 |

*only plans for which catch information was readily available are included at this time.

# 5.0 ENVIRONMENTAL IMPACTS

## 5.1 IMPACTS ON SCALLOP RESOURCE

### 5.1.1 No Action

If No Action is taken under Amendment 15 there are not expected to be substantial impacts on the scallop resource in either direction. The alternatives under consideration for ACLs are expected to have some beneficial impacts on the scallop resource from increased accountability and payback type of measures if catch limits are exceeded. In general, the stacking and leasing alternatives under consideration are expected to have neutral impacts on the resource if adjustments are included to reduce risks of increased catch. But if no action is taken for these alternatives there are no direct impacts on the scallop resource.

The alternative to revise the overfishing definition is expected to have positive impacts on the resource. The current overfishing definition (No Action) and overfishing reference points are based on the assumption that fishing mortality (*F*) is spatially uniform. But, in the scallop fishery this assumption is inaccurate because of unfished biomass in closed areas, variable *F*s in access areas, and spatially variable fishing mortality in open areas that potentially leads to growth overfishing in these areas. Under the current OFD, closed and access areas protect the scallop stock from recruitment overfishing, but growth overfishing may occur in the open areas because the current OFD averages spatially across open and closed areas, i.e. *F* is higher in open areas to compensate for the zero fishing mortality in closed areas. Therefore, No Action on this measure will not have negative consequences on the resource because closed areas help prevent recruitment overfishing, but growth overfishing would be a concern.

None of the measures under consideration for adjustments to the general category management program are expected to have impacts on the resource, so if No Action is taken related to these there would be no impacts on the resource.

No Action on the measure to address EFH closed areas could have impacts on the scallop resource. Having both Amendment 10 and Amendment 13 EFH boundaries apply to the scallop fishery prevents allocating scallop access into areas with the highest catch rates and reduces the benefits of area rotation. If no action is taken for this alternative, effort is shifted into areas with lower scallop catch rates, increasing area swept and potentially having negative impacts on the environment.

If no action is taken on the measures to improve the research set-aside program, the scallop resource would not be impacted.

If no action is taken on changing the scallop fishing year there may be negative impacts on the scallop resource. Keeping the start date at March 1 (No Action) may have negative indirect impacts on the scallop resource because it does not enable the Council to integrate the most recent scallop survey results into analyses used to make decisions for scallop management. Overall, a March 1 start date increases uncertainty and risk because future management decisions are based on older data, which could have indirect impacts on the scallop resource. This could also mean that the Council decides to use more up to date information, and as a result frameworks are implemented late.

### 5.1.2 Compliance with re-authorized Magnuson-Stevens Conservation and Management Act (MSA)

The MSA was reauthorized in 2007. Section 104(a) (10) of the Act established new requirements to end and prevent overfishing, including annual catch limits (ACLs) and accountability measures (AMs). Overall this section includes a summary of new definitions and clarifies how these will be integrated with current scallop reference points. One new requirement is to have an ABC control rule recommended by the SSC. The Act now requires that the specific sources of scientific uncertainty in the fishery be factored in when setting ABC below OFL – the catch associated with the overfishing threshold. Because the Council is not permitted to set catch above ABC, having an ABC control rule should help prevent overfishing, having beneficial impacts on the scallop resource.

The Act also requires the Council set annual catch limits (ACL) equal to or less than ABC. In setting catch levels the Council is required to describe specific sources of management uncertainty in the fishery and account for them when setting the ACL below ABC, or if ACTs are used management uncertainty is explained as the difference between ACL and ACT. The Act also requires that each FMP implement accountability measures if the fishery exceeds the ACL. This action includes several alternatives for AMs, and in theory these measures should help prevent overfishing and hold the fishery more accountable for any overages if they occur. Therefore, AMs are expected to have beneficial impacts on the resource.

This action also considers accountability measures for a sub-ACL of YT flounder. This is the only sub-ACL this fishery has been allocated. Catch and discards of all other species in the scallop fishery have been accounted for before ACLs are set for those directed fisheries. The AMs under consideration for YT flounder may have impacts on the scallop resource depending on which one is selected. Effort shifts are expected with all of the YT AMs under consideration, and effort shifts can have negative consequences on the scallop resource if effort is shifted to less optimal areas and into seasons with lower meat weights. Some of the in-season YT AMs could cause derby fishing, which can also have negative consequences on the scallop resource if effort is merged into a smaller window of time when scallop meat weights are not optimal.

### 5.1.3 Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource

#### 5.1.3.1 No Action

If this alternative is selected, then no additional measures would be implemented to reduce capacity in the limited access scallop fishery. All current restrictions would remain in place. No impacts on scallop resource expected from no action. The fishery has sufficient measures to prevent overfishing, and if not corrective measures can be taken in a framework action to reduce effort.

#### 5.1.3.2 Permit Stacking

This group of alternatives would allow a single limited access vessel to have two limited access scallop permits on one vessel. The only sub-options that could have potential impacts on the resource are described below. Most sub-options related to stacking are not expected to have impacts on the resource.

##### 5.1.3.2.1 Fishing power adjustment for stacking permits

In order to address the concern that stacking could move effort from less powerful or lower-performing vessels to more powerful or higher-performing vessels, potentially increasing capacity and fishing mortality, the Council is considering alternatives for adjusting stacked permits. If the fishing power adjustments are sufficient to prevent potential increases in catch, then there are no impacts expected on the scallop resource. Selecting a higher percentage for the mortality adjustment would reduce potential risks of increased catch, but would have more impacts on the vessels that stack.

It is possible that the alternative that restricts stacking between vessels that meet the replacement criteria could increase catch and *F* because analyses support that even when vessels are the same length and horsepower catch on one can be greater. Vessel age and fishing behavior in terms of trip length can have impacts on catch that would not be accounted for with this alternative. A third alternative is under consideration that is somewhat of a combination alternative; like permits have no adjustment and permits from different categories can stack but are subject to an adjustment. This alternative has similar risks of increased catch for vessels with the same replacement criteria described above. The alternative that puts restrictions on trawl vessels that stack with dredge permits would reduce potential future increases of *F* if that vessel converted back to a trawl permit and fished both permits with trawl gear. Trawl gear is capable of catching smaller scallops, so more animals are killed for the same weight, leading to a higher *F*.

Two options are under consideration for de-stacking: allow it and prohibit it. De-stacking provides more flexibility to the industry to make business decisions. It does remove the possibility to permanently eliminate capacity in the fishery, because permits could later be de-stacked and put back on two separate boats. However, excess capacity does not directly impact the resource so long as there are sufficient measure in place to limit catch and mortality. There are other impacts of excess capacity, but they are not direct impacts on the scallop resource.

#### 5.1.3.3 Leasing

This group of alternatives would allow a limited access scallop vessel to lease fishing effort from another limited access permit. There is one option for DAS leasing and one for leasing of access area trips. There are various options being considered in terms of who can lease and other restrictions. There are also several alternatives for fishing power adjustments that would be applied to leased open area DAS in order to prevent increases in fishing capability. The only sub-options that could have potential impacts on the resource are described below. Most sub-options related to leasing are not expected to have impacts on the resource.

Similar to the discussion above for stacking, if the fishing power adjustments are sufficient to prevent potential increases in catch, then there are no impacts expected on the scallop resource.

Selecting a higher percentage for the mortality adjustment would reduce potential risks of increased catch, but would have more impacts on the vessels that lease.

One option under leasing that could increase catch is the allowance of leasing from CPH. However, the amount of effort currently in CPH is minimal – actually zero permits are in CPH as of 2009. If there were permits in CPH this could increase effort levels beyond what is seen today, but that is not the case. If vessels decide to put their permits in CPH in the future and lease that effort out, overall impacts on the resource should be similar to current levels, provided the effort is not moved to more efficient vessels with no adjustment applied.

There are many other alternatives under consideration related to leasing that are not expected to have impacts on the scallop resource such as history of leased effort, restrictions on who can lease, ownership cap provisions, and application requirements.

#### 5.1.4 Measures to adjust specific aspects of FMP to make overall program more effective

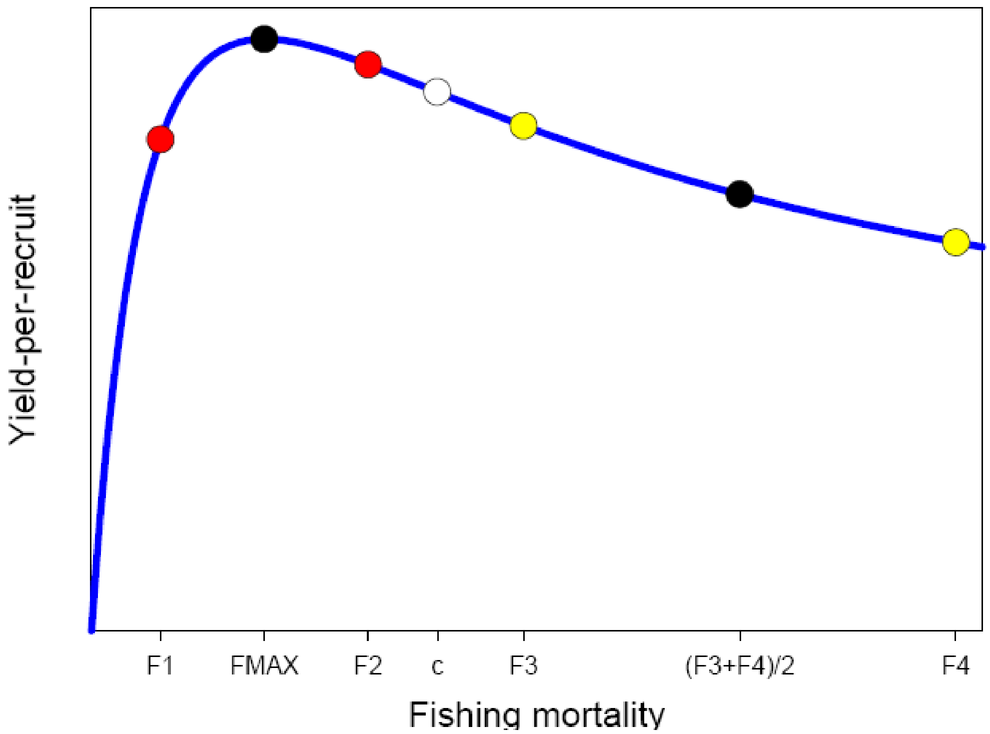
This section contains alternatives for various measures that are already in place. The topics include adjustments to the overfishing definition, modifications to the limited access general category program, revision of the EFH closed areas if Phase II to the Habitat Omnibus Amendment is delayed, improvements to the research set-aside program, and changing the fishing year.

##### 5.1.4.1 Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation

The SQ OFD underestimates the effects of fishing mortality because $F$ is averaged across closed, access, and open areas, which all receive different amounts of fishing pressure. Yield-per-recruit is reduced with a spatially averaged OFD (current) because the yield is far lower in open areas. Additionally, the biomass-per-recruit is higher because of rotational management and the long-term closures.

The A10-proposed OFD has been slightly modified to average $F$ over time within particular areas, thus considering spatial variation and allowing optimal yield to be harvested from both open and access areas. This alternative would also remove the influence of the un-harvested biomass from closed areas (EFH) from the mortality estimate in the open areas, which is the primary cause for currently setting such a low $F_{target}$. An argument that has been presented against altering the OFD is that we already have a low $F_{target}$, a precautionary measure to help mitigate open area overfishing. However, the optimal spatially-averaged fishing mortality target varies from year to year, depending on the fraction of scallops in closed areas, and currently there is no systematic way of setting the target.

A third alternative was developed after the PDT presented the second alternative to the SSC in October 2008; a “hybrid” alternative, combining aspects of the alternative proposed in A10 and the existing overfishing definition. The A10-proposed overfishing definition would be difficult to assess since the area used to calculate fishing mortality would change year to year as areas open and close. On the other hand, the greatest difficulty with the status quo OFD is that the fishing mortality target is set in an *ad hoc* manner. In the hybrid alternative, the threshold would be kept as in the status quo OFD (currently, a spatially averaged *F* of 0.38), whereas the target would be set using the proposed overfishing definition with the additional restriction that the spatially averaged fishing mortality shall be no higher than 80% of the threshold. Under the hybrid definition, the targets for the open and access areas would be set at the level appropriate for each area (e.g., using current information somewhere between 0.23 and 0.26 in open areas, and using the time-averaging principle in the access areas), thus preventing growth overfishing in the open areas while keeping the current simple overfishing threshold.




Amendment 10 explained that in the near term (2004-2008), the current overfishing definition would produce higher landings and DAS allocations, but over the long-term, landings would be reduced. Amendment 10 explained that the A10-modified definition had favorable characteristics like reducing potential impacts on bycatch and habitat by reducing area swept, increasing catch by 10% with larger average scallop size, and in the long-term producing higher stock biomass. The proposed hybrid OFD encounters the same short-term issues and provides the same long-term benefits.

During the 2007 (SAW45) benchmark assessment, it was recommended that alternative reference points be explored because the changes in selectivity have made yield per recruit curves increasingly flat, which makes $F_{MAX}$ more difficult to estimate and sensitive to small changes in assumed parameters. Therefore, a new method for estimating reference points was explored, SYM – Stochastic Yield Model, which explicitly takes into account uncertainties in per recruit and stock-recruit relationships to estimate $F_{MSY}$ and $B_{MSY}$ using Monte-Carlo simulations. Both the Scallop Committee and the SSC reviewed the results and agreed that the overfishing definition within the FMP should be updated to reflect new biological reference points that are based on $B_{msy}$ and $F_{msy}$. Positive impacts are expected from updating the reference points to values based on Fmsy and Bmsy, as approved in SAW50.

#### 5.1.4.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the limited entry program recently implemented for the general category fishery. Amendment 11 to the Scallop FMP limited access in the general category fishery and implemented an IFQ program for qualifying vessels. Several specific ideas were raised during that process but were delayed for consideration because they would require more time for development and analysis. This action is currently considering alternatives to address the following specific issues: rollover of IFQ, consideration of community fishing associations, modification of the general category possession limit, and modification of the maximum quota restriction one vessel can harvest. Other modifications related to Amendment 11 will not be considered in this action.

##### 5.1.4.2.1 Provision to allow IFQ rollover

The Council is considering a rollover allowance for general category IFQ permit holders. If for some reason a vessel is unable to harvest their full IFQ in a given fishing year, a rollover allowance authorizes a vessel to carry forward unused quota for use in the following fishing year. This should not pose any impacts on the resource because the rollover catch is accounted for in year 1, but may be caught in year 2. This could cause issues with annual catch limits, but in terms of impacts on the resource it should be neutral.

##### 5.1.4.2.2 Modify the general category possession limit

The Council is considering a modification to the general category possession limit in response to requests from some of the industry that the current possession limit is not economically feasible. Since the fishery is managed under an IFQ increasing the possession limit or removing it should not have direct impacts on the scallop resource.

##### 5.1.4.2.3 Modify the maximum quota one general category vessel can fish

The Council is considering this alternative to respond to input from the industry that the current ownership restrictions are not consistent. There are currently two ownership restrictions in place: 1) a restriction on the maximum amount of quota an individual can own (5%); and 2) a restriction on the maximum amount of quota that can be harvested from one platform (2%). The alternative under consideration would modify the maximum quota one vessel can fish from 2% to 2.5% of the total general category allocation. This should have no direct impacts on the scallop resource.

##### 5.1.4.2.4 Allow LAGC IFQ permit owners to permanently transfer some or all quota allocation to another IFQ permit holder or community-based trust or permit bank

The intent of this alternative is to allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to another LAGC IFQ permit holder or CFA while retaining the permit itself. Since this fishery is managed by IFQ this should not have direct impacts on the scallop resource because the total amount of catch is limited. It may move IFQ from vessels that would not have necessarily harvested their full IFQ, but projections are based on all general category IFQ being fished, there is no assumed level of non-harvest.

#### 5.1.4.2.5 Implementation of Community Fishing Associations (CFAs)

Because this fishery is managed by IFQ this is not expected to have direct impacts on the resource.

#### 5.1.4.2.6 Measures to address EFH closed areas if the EFH Omnibus Amendment 2 is delayed

This alternative would consider making the EFH closed areas consistent under both FMPs if the EFH Omnibus Amendment 2 timeline is delayed. If selected, only the areas closed for EFH under Amendment 13 would be closed to scallop gear (hatched areas in Figure 41).

Having both sets of EFH areas closed to scallop gear for the last several years has affected the scallop resource by allocating more open area effort than access area effort, primarily because the boundaries in Closed Area I have prevented allocating scallop access in that area. The scallop resource available in the remaining “sliver” has not been sufficient to allocate an access area trip to Closed Area I. As a result, additional open area DAS have been allocated to meet fishing targets, which puts effort in areas with lower catch rates. This increases impacts on the scallop resource if fishing is in suboptimal areas, and increases bottom time which has impacts on bycatch and EFH.

If this boundary issue is resolved, there is sufficient scallop resource within Closed Area I to provide access. This configuration would reduce effort in other less optimal areas. Closed Area I has not been open to the fishery since 2005, so the scallops are large within that area and should be harvested before they reach maximum growth potential. Fishing larger scallops reduces overall *F* compared to equal catch of smaller scallops.

Specifically, based on 1979-2009 survey data, the mean recruitment in the current sliver area is 17.3 million recruits/year, whereas it is 50.9 million recruits/year in the expanded area. Using a yield per recruit of 15.648 g/recruit (from SARC-45), the current sliver access area has a maximal sustainable yield of 271 mt/year, and the expanded area's MSY is 797 mt/year. Thus, expansion would gain 526 mt/year; this is long-term yield. IN the short-term, the estimated 2009 exploitable biomass in the current sliver access area is 1953 mt, compared to 11,495 mt in the expanded access area. In simple terms, 11,495 mt is more than sufficient to allocate a full 18,000 lb trip, while 1953 mt would support about a quarter of 1 trip at best.

### 5.1.4.3 Measures to improve research set-aside program

The measures to improve the research set-aside program are designed to improve the timing and administration of the program. Arguably, if the program can be more streamlined and worthwhile projects can occur with fewer obstacles, better and more timely research will result. This will have indirect benefits on the scallop resource.

There is one alternative that would remove additional TAC specifically for scallop survey work in areas scheduled to open for scallop access. A total of 3% would be removed for research compared to 2%. Having dedicated resource for funding research to survey access areas will improve our ability to allocate the appropriate amount of effort to prevent overfishing and optimize yield.

Lastly, there is an alternative that would include a list of the measures from which research projects may be exempt. A researcher would not need to apply for an experimental fishing permit if the project wished to be exempt from the following restrictions:

- Crew restrictions
- Seasonal closures in access areas
- Requirement to return to port if fishing in more than one area

Eliminating the crew restriction on research trips is not expected to have impacts on the scallop resource provided compensation does not involve harvesting smaller scallops with additional crew. The intent of eliminating the crew restriction on research trips is to enable more researchers onboard, so the likelihood of researchers shucking scallops to be landed as compensation is minimal. Therefore, the impacts of eliminating the crew restriction for research trips and research compensation trips is not expected to have impacts on the scallop resource. In fact, if more research can be conducted on a single trip by allowing more researchers on board, this measure could have indirect benefits for scallop-related research overall.

Allowing research trips access areas during seasonal closures is not expected to have major impacts on the scallop resource that would not be outweighed by the potential benefits of conducting research in that area during that season. For example, in the past there have been seasonal closures in Mid-Atlantic access areas to reduce impacts on sea turtles. Scallop meat weights happen to be lower in September and October compared to other times of the year and quality is not optimal, so overall F from compensation fishing may be higher during that time compared to other seasons. However, the purpose of those closures was to reduce potential interactions with sea turtles, and these two months are expected to have greater probability of interaction than other times of year. If research projects are focused on researching these interactions it would be advantageous to gain access to the area during this time of year. There are seasonal restrictions in the access areas on Georges Bank as well, and providing access during spawning closures may be important to gain valuable information about bycatch of these groundfish species.

Eliminating the requirement to return to port if fishing in more than one area on a research trip should not have any impacts on the resource provided the vessel only fishes the allowed amount of catch in the specified areas. Even if 100% of all compensation fishing takes place in suboptimal areas and seasons, there are still no overall impacts on the scallop resource because this research makes up such a small percentage of the overall fishery.

#### 5.1.4.4 Measures to change the scallop fishing year

The scallop fishing year is out of sync with the framework adjustment process and the timing of when the scallop survey data become available for analysis. As a result, actions have not been implemented at the start of the fishing year, TACs have been misestimated due to reliance on older data, and extra actions have been required to compensate. The Council has considered changing the scallop fishing year several times in the past, but each time the Council decided to maintain the status quo of March 1. One reason the Council is again considering modifying the scallop fishing year is in response to new requirements for ACLs. If the Council decides to allocate ACLs across various FMPs, it may be useful for FMPs to be on the same fishing year to the extent practicable (i.e., May 1 to be consistent with the Groundfish FMP).

The alternative that would modify the fishing year to May 1 would improve integration of best available science into the management process. Moving the start of the fishing year back even two months allows for needed time to process, analyze, and integrate survey data from the current year into management decisions for fishery specifications the following year. This alternative would be most effective if the federal survey can be moved to earlier in the year and data were available earlier in the summer (June rather than September).

The alternative that will include a third year in specifications package as a default since actions tend to be implemented late is expected to have beneficial impacts on the resource. In most cases, rolling over previous measures when an action is late is less ideal and does not optimize yield compared to setting a third year of measures and replacing those with updated information when possible.

## 5.2 IMPACTS OF THE PROPOSED ACTION ON THE PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT (EFH)

The EFH final rule requires that changes made to FMPs through Amendments and Framework actions must ensure that the FMP continues to minimize to the extent practicable adverse effects on EFH caused by fishing.

Many of the alternatives in this Amendment are procedural and/or administrative in nature and are unlikely to affect EFH, just as they are unlikely to have substantial impacts on the sea scallop resource that differ from the status quo. In particular, modifying the Amendment 10 EFH closures to be consistent with the Amendment 13 EFH closures is also not expected to have direct impacts on EFH, as the areas will remain closed to scallop fishing because they are within year round groundfish mortality closures.[3] Other management measures under consideration in this action could have direct, albeit difficult to quantify, impacts to EFH. These include changes to the scallop overfishing definition, and, to a lesser extent, the permit stacking and leasing alternatives. Below, each of the alternatives is described very briefly and then the possible effects on area swept and/or fishing location are discussed.

Once EFH Omnibus Amendment 2 is completed, future EFH analyses will allow for the integration of area swept (and CPUE) assumptions with the spatial distribution of differentially vulnerable habitat types and produce quantitative, spatially-specific adverse effects estimates. However, the impacts evaluation prepared for this action is largely qualitative in nature, and discusses whether or not each alternative might be expected to influence area swept and/or the location of fishing, and thus influence the magnitude of adverse effects. The relative

[3] It is important to note that the impacts of adjusting the scallop fishery access area boundaries would be analyzed in the authorizing FMP framework or amendment.

vulnerability of the current EFH closed areas was estimated using the EFH Omnibus Amendment 2 methods (i.e. Swept Area Seabed Impact or SASI model).

### 5.2.1 Alternatives related to compliance with reauthorized MSA (Section 3.2)

One alternative in this section defines and integrates new terms with existing scallop reference points (Section 3.2.1). This alternative would relate the terms used in the reauthorized MSA to those used in the scallop FMP. Another alternative summarizes old and new terms and describes how they will be integrated in Scallop FMP (Section 3.2.2). Similar to above, this alternative would relate the terms used in the reauthorized MSA to those used in the scallop FMP. These changes are purely administrative and not related to the impacts of the scallop fishery on designated EFH.

The alternatives presented in Section 3.2.3 relate to the implementation of an Annual Catch Limit (ACL) for the sea scallop fishery. In addition to a no action alternative (Section 3.2.3.1), these alternatives include: ACL structure (Section 3.2.3.2); Northern Gulf of Maine ACL (Section 3.2.3.3); Other sources of scallop fishing mortality (Section 3.2.3.4); ACL sub-components (Section 3.2.3.5); Placement of terms and buffers for uncertainty (Section 3.2.3.6); Description of scientific uncertainty (Section 3.2.3.7); Description of management uncertainty (Section 3.2.3.8); Accountability measures for scallop ACLs (Section 3.2.3.9); Scallop ACL for other fisheries (Section 3.2.3.10); ACLs set in other FMPs for the scallop fishery (Section 3.2.3.11); Administrative process for setting ACLs in the Scallop FMP (Section 3.2.3.12); Monitoring ACLs (Section 3.2.3.13); and Timing of ACL monitoring and triggering AMs (Section 3.2.3.14).

As these alternatives are largely procedural/administrative in nature, their implementation in whole or in part is not expected to have significant impacts on designated EFH. As noted in the impacts to scallop resource section of this EIS, the accountability measures associated with the sub-ACL of yellowtail flounder for the scallop fishery may have impacts on the scallop resource depending on which one is selected. Effort shifts are expected with all of the YT AMs under consideration, and effort shifts can have negative consequences on the scallop resource if effort is shifted to less optimal areas and into seasons with lower meat weights. Some of the in-season YT AMs could cause derby fishing, which can also have negative consequences on the scallop resource if effort is merged into a smaller window of time when scallop meat weights are not optimal. To the extent that these shifts affect area swept, or direct effort onto more vulnerable habitat types, an increase in adverse effects to EFH may result. However, these impacts are difficult to predict.

### 5.2.2 Minor adjustments to the limited access general category management program

IFQ rollover of up to 15% (Section 3.4.2.1.2) is being considered in addition to the no action alternative (Section 3.4.2.1.1). Because this alternative would not increase or decrease scallop allocations, but just shift fishing effort between years, impacts to EFH would not be expected to increase as compared to the status quo alternative.

A modification of the possession limit up to 1,000 pounds (Section 3.4.2.2.2) and an elimination of the possession limit (Section 3.4.2.2.3) are being considered in addition to the status quo possession limit of 400 lb (Section 3.4.2.2.1). An increase in or elimination of the possession limit would not increase or decrease scallop allocations and thus total catches, but would allow those allocations to be caught on fewer trips. Impacts to EFH would not be expected to increase as compared to the status quo alternative.

A modification of the maximum quota one vessel can fish from 2% to 2.5% of total general category allocation (Section 3.4.2.3.2) is being considered in addition to the no action alternative (Section 3.4.2.3.1). This alternative is primarily administrative in nature and impacts to EFH would not be expected to increase as compared to the status quo alternative. It is possible that this could result in a shift in the distribution of fishing effort spatially, as vessels from different ports that fish in different locations would have more or less quota, but these shifts would be difficult to predict.

Two alternatives are being considered to allow for transfer of LAGC quota: (1) Allow LAGC IFQ permit owners to permanently transfer some or all quota allocation to another IFQ permit holder (Section 3.4.2.4.1), and (2) Allow LAGC IFQ permits owners to permanently transfer some or all allocation to a community-based trust or permit bank (Section 3.4.2.4.2). These alternatives would not increase the overall allocation of scallop quota to the LAGC permit category, so impacts to EFH would not be expected to increase as compared to the status quo alternative.

Finally, an alternative to implement Community Fishing Associations (CFAs) is being considered (Section 3.4.2.5). This alternative is primarily administrative in nature and impacts to EFH would not be expected to increase as compared to the status quo alternative. However, similar to a change in maximum quota allocation to a vessel, it is possible that this could result in a shift in the distribution of fishing effort spatially, as vessels from different ports that fish in different locations would harvest more or less quota, but again, these changes and their influence on EFH impacts would be difficult to predict.

### 5.2.3 Measures to improve research set-aside program (Section 3.4.4)

Proposed changes to the research set-aside program include (in addition to a no action alternative): Publish federal funding opportunity as early as possible (Section 3.4.4.2); Extend the RSA program to be multi-year (Section 3.4.4.3); Modify open area RSA allocation from DAS to pounds (Section 3.4.4.4); Modify entire RSA allocation to a fixed poundage rather than a percent (Section 3.4.4.5); Separate RSA TAC into 2 subsets (survey and other) (Section 3.4.4.6); Remove additional TAC specific for survey work in addition to 2% set-aside (Section 3.4.4.7); Rollover of RSA TAC (Section 3.4.4.8); Extension for harvesting compensation TAC (Section 3.4.4.9); Increase public input of RSA review process (Section 3.4.4.10); Regulations from which RSA projects are exempt (Section 3.4.4.11). None of these changes are expected to impact designated EFH. However, to the extent that any changes would streamline and facilitate the use of RSA funding for habitat-related research, these measures could have general benefits to habitat. Habitat-related work is one of many priorities identified for the scallop RSA program.

### 5.2.4 Measures to change the scallop fishing year (Section 3.4.5)

Amendment 15 proposes a change in the scallop fishing year from March 1 (the no action alternative, Section 3.4.5.1) to May 1 (Section 3.4.5.2). While in either case the scallop fishery operates year round, this change could affect when fishing occurs. This change is expected to facilitate coordination with the Multispecies fishing year, as subcomponents of ACLs are shared between the fisheries. In addition, this change is expected to facilitate integration of survey information into the management process. Implementation of this alternative is not expected to result in changes in the magnitude of the fishery's adverse effects on EFH.

### 5.2.5 Items to be added to the list of frameworkable items in the FMP (Section 3.5)

This action proposes to add several items to the list of management measures that may be implemented via framework action rather than via FMP amendment. Whether these changes are implemented via framework or amendment has no bearing on their potential impacts to designated EFH. Specifically, the item to adjust EFH boundaries by framework does not pose additional impacts on EFH since those impacts would be analyzed irrespective if the change was considered in a FW or Amendment.

### 5.2.6 Measures to address excess capacity in the LA scallop fishery and provide more flexibility for efficient use of the resource (Section 3.3)

If implemented, these alternatives would create permit stacking and/or leasing programs for the sea scallop fishery. In addition to the no action alternative (Section 3.3.1), the alternatives related to permit stacking include: Restrict stacking to two permits only (Section 3.3.2.1); Fishing power adjustment for stacking permits (Section 3.3.2.2); DAS carryover provision for stacked permits (Section 3.3.2.3); Status of stacked permits (Section 3.3.2.4); and Restrictions on vessel upgrades for vessels that participate in stacking (Section 3.3.2.5). The alternatives related to fishing power are intended to ensure that permit stacking would be conservation neutral, or in other words, that scallop harvest would be similar regardless of stacking. Broadly, if scallop catches under stacking are similar to the status quo alternative, similar impacts to EFH would be expected.

Additional alternatives are related to permit leasing (Section 3.3.3). These include: Leasing of open area DAS (Section 3.3.3.1); Leasing of access area trips (Section 3.3.3.2); Maximum DAS and access area trips that can be leased (Section 3.3.3.3); Ownership cap provisions (Section 3.3.3.4); Leasing restrictions options (Section 3.3.3.5); Application Requirements (Section 3.3.3.6); Leasing from vessels in CPH (Section 3.3.3.7); Sub-leasing (Section 3.3.3.8); and Other Provisions for vessels that lease DAS and/or access area trips (Section 3.3.3.9). Similar to the stacking alternatives, the alternatives related to fishing power are intended to ensure that permit leasing would be conservation neutral. Again, if scallop catches under leasing are similar to the status quo alternative, similar impacts to EFH would be expected.

Although fishing mortality is intended to remain relatively constant under all of these alternatives, it is possible that the location of fishing may change. As noted in the introduction to the EFH impacts section, an assumption of the EFH impact model being developed for EFH Amendment 2 is that, for a particular gear type (for this fishery, mostly New Bedford-style scallop dredges), seabed impact may vary by location based on the habitat features assumed to occur based on the dominant substrate and energy environment of the area being fished. Either the stacking of permits or the leasing of open area days at sea could potentially shift scallop fishing effort spatially, and thus could increase or decrease impacts to EFH if fishing then occurs in areas that are more or less susceptible to scallop fishing gear, and/or if those areas recover more slowly or quickly following impact. However, as much scallop fishing occurs in specified access areas, these spatial shifts are expected to be limited. In access areas, because trip limits are fixed, transfers of access trips between vessels that capture scallops more or less efficiently per area swept, seabed impacts would be expected to decline or increase, respectively.

The particular transfers of fishing effort between vessels that might occur under stacking or leasing are very difficult to predict, as are any spatial shifts in fishing effort and area swept that might result from these transfers. Therefore, it is assumed that because the alternatives are designed to be conservation neutral that any additional EFH impacts beyond the status quo alternative would be negligible.

### 5.2.7 Measures to adjust the current OFD to be more compatible with area rotation (Section 3.4.1)

Two alternative overfishing definitions are being considered, in addition to the status quo (Section 3.4.1.1): Amendment 10 Overfishing Definition – Time-Averaged within Specific Areas (Section 3.4.1.2); and Hybrid Overfishing Definition Alternative (Section 3.4.1.3). To the extent that the two alternative overfishing definitions allow for the harvest of dense aggregations of scallops, thus increasing catch efficiency, the selection of either alternative over the status quo could potentially reduce area swept and thus would reduce adverse effects on seabed habitats and EFH.

### 5.2.8 Measures to address EFH closed areas if EFH Omnibus Amendment 2 is delayed (Section 3.4.3)

This action proposes to change the EFH closed areas implemented under Amendment 10 to the Scallop FMP in the Western Gulf of Maine Closed Area, Closed Area I, Closed Area II, and the Nantucket Lightship Closed Area to make them congruent with the habitat closed areas implemented via Amendment 13 to the Multispecies FMP. The elimination of the Amendment 10 closures would improve the practicability of the habitat closed areas and eliminate conflicts between the two FMPs. Reconciliation of the two sets of habitat closures was proposed in a joint framework to the Scallop and Multispecies FMPs (Framework 16/39, 2004). However, the closures were ultimately not reconciled under this action. In response to Oceana v. Evans, et al., (Civil Action No. 04-810, D.D.C., August 2, 2005, and October 6, 2005), the court determined that EFH closure boundaries could not be changed via framework action and that such changes would require a full FMP amendment, and the closures established by Amendment 10 were reinstated.

The current scallop access areas that comply with both the Amendment 13 and Amendment 10 EFH closures are shown below (Figure 41). Elimination of the Amendment 10 closures does not automatically grant scallop access to the portions of the groundfish mortality closed areas that are not habitat closures under Amendment 13; sea scallop access areas would need to be re-specified via a joint framework action between the two plans. However, scallop fishing in the portions of the groundfish mortality closed areas has been granted to the scallop fleet in previous frameworks, and it is reasonable to expect that adjustments to these areas would be proposed in subsequent scallop actions.

If no action is taken for this alternative, both Amendment 10 and Amendment 13 EFH/habitat area closures would apply to the scallop fishery, thus preventing the scallop industry from gaining future access into areas with the highest catch rates and reducing the benefits of area rotation. As a result, effort would likely be shifted into areas with lower scallop catch rates, increasing area swept and potentially having negative impacts on seabed habitats. To the extent that the proposed alternative would allow for the future harvest of dense aggregations of scallops in portions of the year-round multispecies mortality closures, choosing this alternative over the status quo could potentially reduce area swept and thus impacts to seabed habitats and EFH.

In particular, the alternative proposed in the current action would allow for the scallop access area in Closed Area I to be extended to the south at some point in the future. If the CAI scallop access area were larger, sufficient biomass would be available to allocate a trip into the area. When considering joint Frameworks 16/39 to the Atlantic Sea Scallop and Northeast Multispecies FMPs, the Council concluded that the potential habitat gain from protecting the southern part of the access area in Closed Area I that has not been part of a previous access program did not outweigh the economic costs of preventing the scallop fleet from accessing this area.

Because this action would not alter the boundaries of the current scallop access areas, this document does not evaluate the specific impacts to EFH that would result from spatial shifts in fishing effort that would follow such adjustments to the access area boundaries. However, some general information about the benthic environment within and around these closures is summarized for information purposes in the affected environment section of this document. This includes (1) information about the sizes of the area closures, and (2) maps of the substrate and energy composition of the scallop and multispecies habitat closures. The potential future actions that might affect the magnitude of impacts to EFH impacts discussed in the cumulative effects section of this document.

The Swept Area Seabed Impact model (a tool developed by NEFMC's Habitat PDT for evaluating spatially-specific adverse effects) was used to estimate the relative area-weighted vulnerability for each of the Amendment 10 and Amendment 13 EFH closures to scallop dredges (see table below). Detailed description and analyses of the SASI model can be found on the Council EFH website (www.nefmc.org). This vulnerability estimate, denoted as $Z\infty$, considers the susceptibility of structural habitat features inferred to each area to scallop dredge gear, and also the recovery time of those features following impact. To generate these estimates, the same amount of hypothetical scallop dredge fishing effort was applied to each grid cell in the model domain (i.e. 100 $km^2$ of area swept was applied to all grid cells).

Each grid cell in the SASI domain is coded as to the proportion of mud, sand, granule-pebble, cobble, or boulder substrate that occurs in the cell, and each substrate type is further classified as high or low energy. Depending on the substrate and energy combination, various structural habitat features (e.g. cobble piles, sponges, bryozoans, biogenic burrows, etc. are inferred to each habitat type (substrate plus energy) occurring in the cell. Vulnerability scores were assigned on a feature-by-feature basis, which consist of a susceptibility and recovery element. According to the magnitude of these scores, the 100 $km^2$ of area swept is each cell is downwardly adjusted. These adjustments are small for high vulnerability scores, and larger for low vulnerability scores. Thus, the final $Z\infty$ value is larger when vulnerability is generally higher for the features inferred to the cell, and lower when vulnerability scores are lower. In the table below, higher $Z\infty$ scores indicate higher vulnerability of the habitats in that cell to fishing by scallop dredge gear, while lower Z∞ scores indicate lower vulnerability of the habitats in that cell to fishing by scallop dredge gear,

The results of this analysis show that the area-weighted mean Z∞ values are very similar between corresponding areas (e.g. NLCA scallop vs. NLCA groundfish), which indicates that one set of closures (A10 or A13) is not demonstrably better than the other in terms of protecting vulnerable seabed habitats from the adverse effects of fishing. The major difference between the two sets of areas is that the CAII Groundfish EFH Closure encompasses relatively more vulnerable habitat when the area weighted mean is compared to the CAII Scallop EFH Closure. The CAII Scallop EFH Closure has a much higher sum Z∞ value, bit that area is much larger and includes more area that is not as vulnerable to fishing.

The sum Z∞ values are generally somewhat higher for the scallop EFH areas because the areas are larger. However, when a potential new area rotation scheme is analyzed in a subsequent framework action that incorporates some of these areas, the potential sum Z∞ values obtained will be more meaningful, as they will incorporate actual fishing effort estimates, rather than uniform fishing effort densities across all areas. Thus, assuming that any fishing authorized in areas currently closed under A10 but not closed under A13 meets the area rotational goals of high catch per area swept, it is reasonable to assume that the scallop fishery will continue to minimize the adverse effects of fishing on EFH following implementation of the next scallop framework. In terms of the impacts of this action on EFH, the scallop FMP will continue to have EFH closures in place in the WGOM, CAII, CAI, and the NLCA, which serves to protect these areas from seabed impact/adverse effects.

**Table 82 - Summary of area weighted mean Z∞ and total Z∞ for each of the A10 and A13 habitat closure areas. The Z∞ values are calculated with respect to scallop dredge impacts, and only the portions of each area shallower than 83 m were considered, because 99% of scalloping occurs shallower than 83 m according to past fishery observer data.**

| Area name | $km^2$ | AWM Z∞ | Sum Z∞ |
|---|---|---|---|
| CAI Groundfish EFH Closure (Northern section) | 1937 | 48.701** | 408.59** |
| CAI Scallop EFH Closure (Northern section) | 1361 | 49.504** | 166.69** |
| CAI Groundfish EFH Closure (Southern section) | 584 | 48.933 | 645.91 |
| CAI Scallop EFH Closure (Southern section) | 1351 | 49.598 | 1195.10 |
| CAII Groundfish EFH Closure | 641 | 52.075 | 784.44 |
| CAII Scallop EFH Closure | 3027 | 49.607 | 2102.73 |
| NLCA Groundfish EFH Closure | 3387 | 49.220 | 2221.91 |
| NLCA Scallop EFH Closure | 5106 | 49.033 | 2778.98 |
| WGOM Groundfish EFH Closure | 2272 | 50.987** | 398.77** |
| WGOM Scallop EFH Closure | 3030 | 50.987** | 398.77** |
| Cashes Ledge Groundfish EFH Closure | 443 | * | * |
| Jeffrey's Bank Groundfish EFH Closure | 499 | * | * |

*These areas are deeper than the maximum depth at which the scallop fishery operates, so no adverse effect calculation was done for scallop dredge gear

**Portions of these areas deeper than 83m, so AWM Z∞ and Sum Z∞ values only consider cells with average depth shallower than 83m

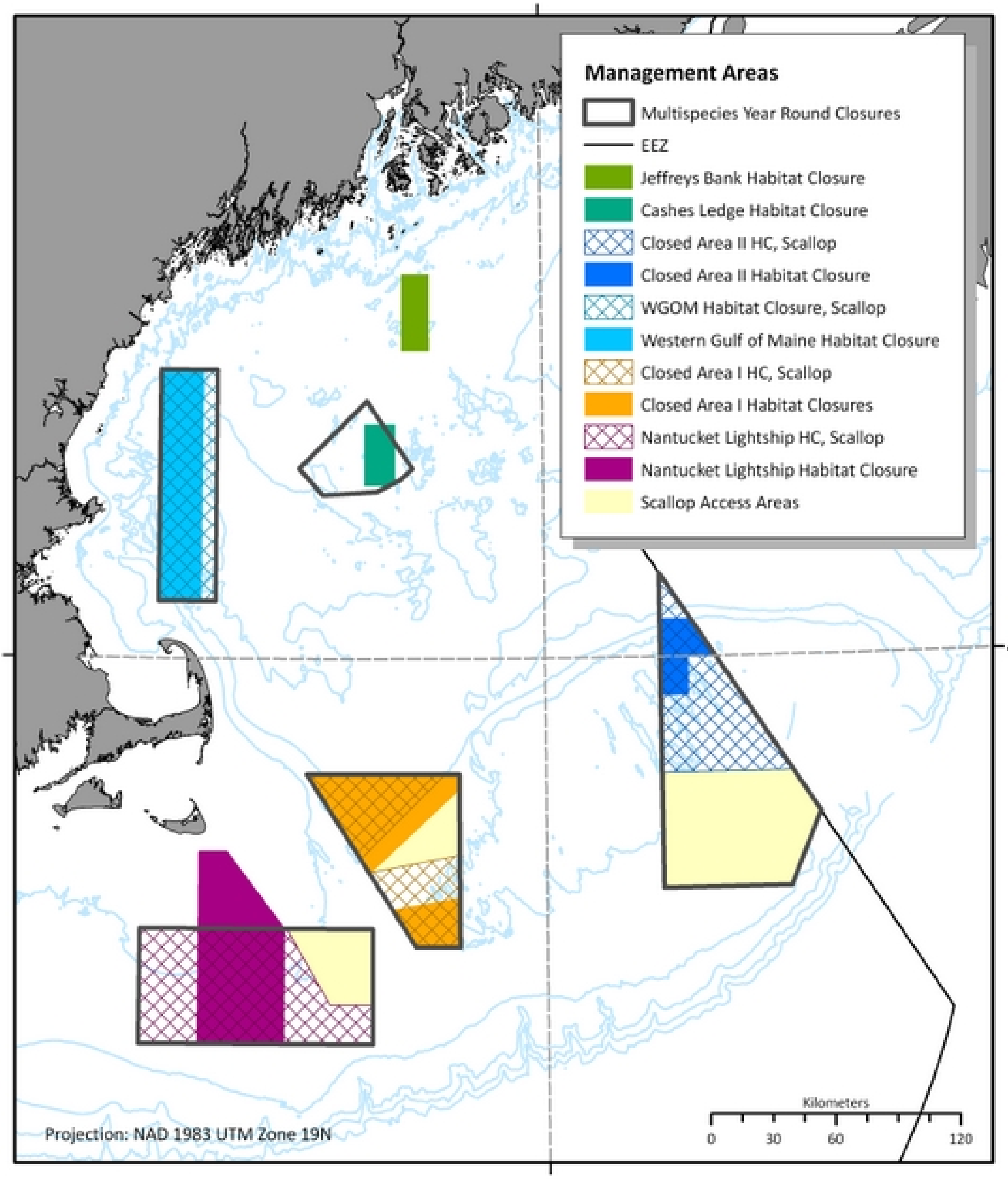



**Figure 41 - EFH closures currently in effect under Scallop Amendment 10 and Multispecies Amendment 13. Scallop access areas are shown in light yellow.**

#### 5.2.8.1 Summary of impacts to EFH

The potential effects of the Amendment 15 measures on EFH are summarized in Table 83.

**Table 83 – Summary of impacts to EFH**

| ***Measures*** | ***Adverse effects to EFH compared to status quo?*** | ***Notes*** |
|---|---|---|
| Measures to bring FMP in compliance with MSA ACL/AM requirements | In general, probably neutral – YT AMs possibly negative | Most measures are administrative changes; yellowtail accountability measures that shift fishing from access areas to open areas may result in increased impacts to EFH if area swept increases as a result |
| Adjustments to Limited Access General Category fishery | Probably neutral | Difficult to evaluate – but could have effects on the location of fishing effort and the amount of area swept – however, overall catch would remain constant |
| Adjustments to Research Set Aside Program | Possibly indirectly positive | May facilitate habitat-related research |
| Change in fishing year from March 1 to May 1 | Probably neutral | Will not change allocations |
| Changes to items that are frameworkable | Probably neutral | Whether measures are implemented via framework amendment is irrelevant to EFH impacts |
| Measures to implement stacking and/or leasing in Limited Access fishery | Probably neutral | Difficult to evaluate - but could have effects on the location of fishing effort and the amount of area swept – however measures intended to be fishing-mortality neutral |
| Change to scallop overfishing definition to be more compatible with area rotation | Possibly positive | To extent that these changes will allow more efficient harvest of scallops, it may reduce area swept and thus impacts to EFH |
| Make scallop FMP Habitat Closed Areas congruent with those in Multispecies FMP | Neutral | Because year round groundfish closures are in effect, fishing effort would not shift under this action, but might be expected to shift under subsequent scallop actions |

As compared to the no action alternative, the alternatives under consideration are not expected to result in increased impacts of the scallop fishery on EFH. As the EFH Assessment concludes, the overall habitat impacts of all the measures combined in this action are expected to have neutral to positive effects on EFH. Relative to the baseline habitat protections established under Amendment 10 to the Atlantic Sea Scallop FMP, those impacts are negligible; relative to the No Action alternative, those impacts are marginally positive. Therefore, measures to further mitigate or minimize adverse effects on EFH are not necessary (See Section 6.1.3).

## 5.3 IMPACTS ON PROTECTED RESOURCES

### 5.3.1 Background

The Amendment 15 alternatives are evaluated below for their impacts on protected resources with a focus on threatened and endangered sea turtles, as noted in the Affected Environment Section. As with the analyses provided in the last scallop management action, the species considered here are loggerhead, leatherback, Kemp's ridley and green sea turtles.

Both scallop dredge and scallop trawl gear will be addressed in this section, generally collectively, given they are the most commonly used gears by general category and limited access vessels in this fishery. To evaluate impacts it may be helpful to note that the majority of fishing effort is attributed to the dredge fishery. Most of the approximately 325 active limited access vessels use dredge gear. There are about 350 general category vessels that are expected to be allowed to land 5 percent of the total projected scallop landings once the transition to the IFQ program implemented under Amendment 11 is effective. The vast majority of scallop landings by limited access and general category vessels is with dredge gear (Table 53 and Table 57).

To briefly summarize the sea scallop fishery management program, it employs a limited access permit system and controls DAS use in scallop open areas. Limited numbers of trips with trip limits also are allowed in designated rotational access areas. Major harvest areas include Georges Bank with less activity in the Gulf of Maine. Both are regions in which turtles are far less likely to be found relative to Mid-Atlantic waters, where effort and scallop catch levels have increased in recent years. In addition, directed general category scallop fishing effort has increased overall since 1994, including new effort in the Mid-Atlantic, but this trend is being addressed by measures implemented in Amendment 11.

Although scallop fishing is a year-round activity, takes of sea turtles potentially may occur from May through November given the overlap of the sea turtle distribution (Shoop and Kenney 1992; Braun-McNeill and Epperly 2002) and fishery effort (NEFMC 2003, 2005).

With respect to sea turtle interactions with the fishery overall, it is noteworthy that there were very low levels of observer coverage throughout the fishery up to 2003. Since that time, bycatch rates, with a focus on the Mid-Atlantic, have been analyzed in a number of publications that are discussed in the Affected Environment section.

Beginning in September 2006, federally permitted scallop dredge gear must be modified by adding an arrangement of horizontal and vertical chains, referred to as "chain mats", between the sweep and the cutting bar when fishing in an area that extends south of 41° 9.0 N from the shoreline to the outer boundary of the EEZ during the period May 1 through November 30 each year (71 FR 50361). The requirement is expected to reduce the severity of some turtle interactions with scallop dredge gear.

On March 14, 2008, NMFS completed an Endangered Species Act (ESA) Section 7 Consultation on the Atlantic Sea Scallop Fishery Management Plan.[4] Under the ESA, each Federal agency is

[4] The full biological opinion can be found at http://www.nero.noaa.gov/prot_res/section7/.

required to ensure its actions are not likely to jeopardize the continued existence of any listed species or critical habitat. If a Federal action is likely to adversely affect a listed species, formal consultation is necessary. Five formal Section 7 consultations, with resulting biological opinions, have been completed on the Atlantic sea scallop fishery to date. All five have had the same conclusion: the continued authorization of the scallop fishery may adversely affect, but is not likely to jeopardize the continued existence of four sea turtles (loggerheads, green, Kemp's ridley, and leatherback).

With respect to Amendment 15, there will not be major changes in the amount or areas that scallop vessels fish from most of the alternatives under consideration. Specific measures that impact scallop fishing patterns directly are generally implemented by framework action. Discussions regarding sea turtle interactions with the fishery are largely qualitative and based on whether alternatives under consideration are expected to shift effort to the Mid-Atlantic. Sea turtles migrate through and forage within certain parts of the Mid-Atlantic primarily during the summer and fall. Sea turtles also occur in Northeastern waters, but to a lesser extent, and interactions with scallop gear may occur, but the potential is less than in the Mid-Atlantic. The alternatives under consideration are evaluated below in terms of whether they are expected to shift scallop effort from other areas or seasons that have lower potential interactions with sea turtles.

### 5.3.2 No Action

If No Action is taken under Amendment 15 there are not expected to be any additional impacts on protected resources. The alternatives under consideration for ACLs are expected to have no impacts since they are related to increased accountability and payback type of measures for the fishery if catch limits are exceeded. In general, the stacking and leasing alternatives under consideration are expected to have neutral impacts on protected resources so long as more effort is not shifted to the Mid-Atlantic as a result of stacking and leasing. Overall effort shifts are not expected from stacking and leasing alone since the level of stacking and leasing is expected to occur within businesses that are in multi-vessel businesses already. It is impossible to predict exactly which vessels will decide to participate in stacking and leasing, but overall there is no reason to believe that overall effort levels in the Mid-Atlantic would be impacted as a result.

Taking no action on the alternative to revise the overfishing definition is not expected to have direct impacts on protected resources.

None of the measures under consideration for adjustments to the general category management program are expected to have direct impacts on protected resources, so if No Action is taken related to these there would be no impacts on protected resources.

No Action on the measure to address EFH closed areas would not have direct impacts on protected resources; however, having both Amendment 10 and Amendment 13 EFH boundaries apply to the scallop fishery prevents allocating scallop access into areas with the highest catch rates and reduces the benefits of area rotation. If no action is taken for this alternative, effort is shifted into areas with lower scallop catch rates, increasing area swept and potentially having negative impacts on the environment including protected resource. If more open area DAS are allocated to compensate for losses of yield in Closed Area I for example, some of those days could be fished in the Mid-Atlantic with higher potential interactions with sea turtles compared to fishing within Closed Area I.

If no action is taken on the measures to improve the research set-aside program, protected resources would not be impacted.

Lastly, if no action is taken on changing the scallop fishing year there are no expected impacts on protected resources.

### 5.3.3 Compliance with re-authorized Magnuson-Stevens conservation and management act (MSA)

The majority of measures under consideration for this section have no direct impacts on protected resources. Within this section there are alternatives for accountability measures (AMs) for the scallop fishery and for a sub-ACL of YT flounder. The AMs under consideration for YT flounder may have impacts on protected resources depending on which alternative is selected. Effort shifts are expected with all of the YT AMs under consideration, and effort shifts can have negative consequences on protected resources if effort moves to the Mid-Atlantic. For example, the YT stock area with higher catch rates is GB, and if the scallop fishery is not allocated enough YT flounder on GB to provide sufficient access in that YT stock area, more effort may be allocated within the SNE/MA YT stock area. Some of the AM alternatives suggest that if one YT stock area reaches the YT quota then effort will shift to other YT stock areas. Others include a maximum DAS that can be used in a particular YT stock area, and if this occurs in GB or CC/GOM stock areas, more effort could be used in the SNE/MA stock areas, which includes all waters south of Long Island.

### 5.3.4 Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource

#### 5.3.4.1 No Action

If this alternative is selected, then no additional measures would be implemented to reduce capacity in the limited access scallop fishery. All current restrictions would remain in place. No impacts on protected resources are expected from no action.

#### 5.3.4.2 Permit Stacking and leasing

This group of alternatives would allow a single limited access vessel to have two limited access scallop permits on one vessel. In general, the stacking and leasing alternatives under consideration are expected to have neutral impacts on the protected resources so long as more effort is not shifted to the Mid-Atlantic as a result of stacking and leasing. Overall effort shifts are not expected from stacking and leasing alone since the level of stacking and leasing is expected to occur within businesses that are in multi-vessel businesses already. Specifically, some vessels are expected to stack within businesses currently in the Mid-Atlantic and some vessels are expected to stack with vessels that are from New England. It is impossible to predict exactly which vessel will decide to participate in stacking and leasing, but overall there is no reason to believe that overall effort levels in the Mid-Atlantic would be impacted as a result.

There are fishing power adjustment alternatives under consideration that would reduce the DAS allocated to a permit that is stacked onto another vessel. This reduction will decrease the total amount of DAS allocated to the fishery, but effort on vessels that stack is expected to be more efficient. So while fewer DAS will be available to the fishery, the overall level of effort or time gear is on the bottom is expected to be similar. With more DAS on one platform the vessels will have more flexibility and it is expected they will be more efficient – so overall catch per DAS will be higher. Overall LPUE will be higher per DAS, but that platform will have fewer DAS than two separate vessels, so potential impacts on protected resources from these measures alone are expected to be neutral.

In terms of access area effort, if stacking and leasing leads to more efficient fishing in access areas and therefore less time gear is on the bottom, there could be potentially beneficial impacts on protected resources. More efficient fishing in access areas with a possession limit reduces bottom time overall, but more efficient fishing in open areas does not necessarily reduce bottom time because those vessels are not limited by a possession limit. Specifically, larger, more powerful vessels can pull gear through the water faster and more efficient crews can shuck faster, so with no possession limit those factors could increase time gear is on the bottom. Overall, if the fishing power adjustments are sufficient to prevent potential increases in catch (or bottom time), then there are no impacts expected on protected resources. Selecting a higher percentage for the mortality adjustment would reduce potential risks of increased catch (and increased bottom time), but would have more impacts on the vessels that lease/stack.

The other sub-alternatives related to stacking and leasing are not expected to have impacts on protected resources.

### 5.3.5 Measures to adjust specific aspects of FMP to make overall program more effective

This section contains alternatives for various measures that are already in place. The topics include adjustments to the overfishing definition, modifications to the limited access general category program, revision of the EFH closed areas if Phase II to the Habitat Omnibus Amendment is delayed, improvements to the research set-aside program, and changing the fishing year.

#### 5.3.5.1 Measures to adjust the current overfishing definition (OFD)

The alternatives to revise the overfishing definition are not expected to have direct impacts on protected resources.

#### 5.3.5.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the general category fishery. The IFQ rollover provision should not have any impacts on protected resources. As for the possession limit alternatives, since the fishery is managed under an IFQ increasing the possession limit or removing it should not have direct impacts on protected resources. The alternative under consideration to increase the maximum quota one vessel can fish from 2% to 2.5% of the total general category allocation is not expected to have direct impacts on the scallop resource.

The alternative that would allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to another LAGC IFQ permit holder or CFA holder while retaining the permit itself should not have direct impacts on protected resources. These vessels were not likely to use their scallop IFQ so transferring it to another vessel is for economic reasons, and should not affect fishing behavior. If small amounts of quota from many vessels is pooled together into one new operation in the Mid-Atlantic that could increase directed LAGC fishing in that area, but since this fishery is managed by IFQ this should not have direct impacts on protected resources because the total amount of catch is limited. It may move IFQ from vessels that would not have necessarily harvested their full IFQ, but projections are based on all general category IFQ being fished, there is no assumed level of non-harvest.

The alternative that would implement community fishing associations is not expected to have direct impacts on protected resources because the fishery is managed by an overall IFQ. It is possible that CFAs from the Mid-Atlantic could pool effort from other areas and lease quota to vessels in the Mid-Atlantic increasing fishing effort near those ports, but the total amount of IFQ one group or community can hold is limited.

#### 5.3.5.3 Measures to address EFH closed areas if the EFH Omnibus Amendment 2 is delayed

This alternative would consider making the EFH closed areas consistent under both the scallop and multispecies FMPs if the EFH Omnibus Amendment 2 timeline is delayed. If selected, only the areas closed for EFH under Amendment 13 would be closed to scallop gear; the areas closed for EFH under Amendment 10 would be eliminated.

Having both sets of EFH areas closed to scallop gear for the last several years has affected where scallop effort is allocated. Overall, more open area DAS have been allocated than the plan would have done if there were not constraints on access areas within GB closed areas (primarily because the boundaries in Closed Area I have prevented allocating scallop access in that area). The scallop resource available in the remaining “sliver” of Closed Area I has not been sufficient to allocate an access area trip in that area. As a result, additional open area DAS have been allocated to meet fishing targets, which puts effort in areas with lower catch rates. Some of these open area DAS are likely fished in the Mid-Atlantic, particularly on vessels that are from those ports. If the access area boundaries are modified, more effort will likely be allocated within GB closed areas in the future, which may reduce fishing time in open areas in the Mid-Atlantic.

#### 5.3.5.4 Measures to improve research set-aside program

The measures to improve the research set-aside program are designed to improve the timing and administration of the program. Arguably, if the program can be more streamlined and worthwhile projects can occur with fewer obstacles, better and more timely research will result, having indirect positive benefits on protected resources since research on that topic is a high priority.

There is an alternative that would include a list of the measures from which research projects may be exempt. A researcher would not need to apply for an experimental fishing permit if the project wanted to be exempt from the following restrictions:

- Crew restrictions
- Seasonal closures in access areas
- Requirement to return to port if fishing in more than one area

Eliminating the crew restriction on research trips is not expected to have impacts on protected resources so long as compensation for research trips does not harvest smaller scallops with additional crew (more bottom time for same poundage if scallops are smaller). The intent of eliminating the crew restriction on research trips is to enable more researchers onboard, so the likelihood of researchers shucking scallops to be landed as compensation is minimal. Therefore, the impacts of eliminating the crew restriction for research trips and research compensation trips is not expected to have impacts on protected resources.

Allowing research trips access in Elephant Trunk during the seasonal closure of September 1-October 31 would likely have impacts on protected resources. It is not clear if the potential impacts would be outweighed by the potential benefits of conducting research in that area during that season when interaction rates are expected to be highest so that we could learn the most about reducing impacts of the fishery on turtles. It is unlikely that all the RSA set aside for ETA would be harvested during this seasonal closure because this time of year has lower meat weights and quality is not optimal. However, there is demand for Elephant Trunk scallops and if the rest of the fishery is closed out of the area, prices may be higher for pounds from that area during the seasonal closure. If all 2% of the set aside for ETA was used during the months of September and October in 2011 (when this action would be effective) that would equate to about 120,000 pounds (1 trip is expected in 2011, so 2% of 6.0 million). If catch rates are about 2,500 pounds a day (similar to average LPUE for access area trips in recent years) that would equal roughly 48 DAS. For comparison, the scallop fishery will likely be allocated about 32 DAS for open areas in 2011. The fishery tends to fish about half the allocated DAS in the Mid-Atlantic, and an average of 13% of those are during the months of September and October (based on catch data from 2004-2008). Eliminating the seasonal restrictions for access areas on GB for spawning GF species are not expected to have any impacts on protected resources since those areas are not primary areas sea turtles inhabit.

Eliminating the requirement to return to port if fishing in more than one area on a research trip should not have any impacts on protected resources.

#### 5.3.5.5 Measures to change the scallop fishing year

The scallop fishing year is out of sync with the framework adjustment process and the timing of when the scallop survey data become available for analysis, so this action is proposing changing the fishing year to May 1 from March 1. This alternative should not have any direct impacts on protected resources. The alternative that sets measures for a third year could have indirect beneficial impacts by allocating the fishery access to areas that are more likely to have higher catch per unit of effort, compared to rolling over previous measures under the No Action if subsequent actions are delayed.

## 5.4 ECONOMIC IMPACTS

### 5.4.1 No Action

If No Action is taken substantial impacts are not expected on scallop landings, revenues, producer and consumer surpluses, and net economic benefits from the scallop fishery. There are always risks of overfishing the resource due to the scientific and management uncertainty. The current measures do not have well-defined accountability and payback mechanisms if catch limits are exceeded due to these sources of uncertainty. These risks could result in less-than-optimal economic benefits from the sea scallop resource.

Under No Action, the sea scallop fishery will continue to have an excess harvesting capacity and the economic benefits from the scallop resource will fall short of optimum levels. On the other hand, No Action would result in higher employment in the harvesting sector compared to the permit stacking and leasing measures proposed in Amendment 15. The permit stacking/leasing alternatives will also increase management uncertainty in the short-term and could lead to increased fishing mortality in the open areas if proper adjustments for fishing power and increased efficiency are not implemented.

With the current overfishing definition under No Action there will always be a concern for growth overfishing in the open areas. Under the current OFD, closed and access areas protect the scallop stock from recruitment overfishing, but growth overfishing may occur in the open areas because the current OFD averages spatially across open and closed areas, i.e. $F$ is higher in open areas to compensate for the zero fishing mortality in closed areas.

If No Action is taken in regard to the general category management program, including the implementation of community fishing associations (CFAs), the overall economic impacts on the sea scallop fishery will be small, but there will be always a risk of not fishing the general category TAC in full. Additionally, the costs for this fishery will be higher than optimal due to the constraints from the 400 pound trip limit.

No Action on the measure to address EFH closed areas could result in less than optimal yield and economic benefits materialized from the scallop fishery. Having both Amendment 10 and Amendment 13 EFH boundaries apply to the scallop fishery prevents allocating scallop access into areas with the highest catch rates and reduces the benefits of area rotation. If No Action is taken for this alternative, effort is shifted into areas with lower scallop catch rates, increasing the fishing costs and reducing economic benefits from the fishery.

If No Action is taken on the measures to improve the research set-aside program, the problems associated with delays in research would continue. If No Action is taken on changing the scallop fishing year there may be some negative indirect impacts on economic benefits because the current fishing year does not enable the Council to integrate the most recent scallop survey results into analyses used to make decisions for scallop management. On the other hand, No Action would require no change in the business plans of the scallop fishermen and reduce the risks associated with putting off the major fishing decisions to a date later than March 1.

### 5.4.2 Compliance with re-authorized Magnuson-Stevens conservation and management ACT (Proposed Action)

Amendment 15 will implement ACLs, so target fishing levels will be set lower than the fishing mortality rate associated with ACL in order to account for uncertainty and prevent overfishing. The FMP will set TACs, quotas, and effort allocations based on the new catch limits. The MSA established new requirements to end and prevent overfishing, including annual catch limits (ACLs) and accountability measures (AMs). The sources of scientific uncertainty in the fishery would be factored out when setting ABC below OFL – the catch associated with the overfishing threshold. Because the Council is not permitted to set catch above ABC, having an ABC control rule should help prevent overfishing and have beneficial impacts on the scallop resource, scallop yield, revenues, producer and consumer surpluses, and net economic benefits from the fishery.

The Act also requires the Council set annual catch limits (ACL) equal to or less than ABC. In setting catch levels the Council is required to describe specific sources of management uncertainty in the fishery and account for them when setting the ACL below ABC. Or, if ACTs are used, management uncertainty is explained as the difference between ACL and ACT. The alternatives under consideration for ACLs are expected to have some beneficial impacts on the scallop resource from increased accountability and payback measures if catch limits are exceeded. The short-term and long-term economic benefits of setting ACTs will depend on the difference of annual ACTs from the landing streams that would be projected to materialize without a change in management process, i.e., under the status quo scenario. Under the present system, DAS and access area trip allocations are determined from the levels of landings corresponding to the target $F$ levels, which is 20% of $F_{threshold}$ (or $F_{max}$). The new system is expected to result in a similar landings stream compared to the status quo management depending on the AM alternatives which determine the specific buffers between ACL and ACT. More discussion on the new system in comparison to status quo is provided in the Biological Impacts Section of this document (Section 5.1). If the landings stream with the ACLs results in similar landings stream, there would be no change in economic benefits from the status quo levels except for the impacts of AMs on revenues and costs. Even if the landing streams changed as a result of the new measures, the risk to the resource from overfishing due to scientific or management uncertainty would be minimized with the proposed measures because these sources of uncertainty are better accounted for. Minimizing risk to the resource is expected to keep the landings and economic benefits relatively more stable and reduce the uncertainty in business decisions. There could be an increase in the administrative costs due to the monitoring requirements for ACT subcomponents and accountability measures as discussed below.

#### 5.4.2.1 ACL structure and subcomponents (Proposed Action)

With the proposed action, an ACL flow chart will be used which is based on the structure OFL > ABC = ACL > ACT. Mortality from discards, incidental catch, and catch from state permitted vessels will be accounted for in setting OFL (OFL will be reduced by estimates of catch from these sources of mortality). Sub-ACLs will be administered for the LA and LAGC fisheries at 94.5% and 5.5% of the overall ACL, respectively. Proposed action would set LA sub-ACT at an F rate with 25% probability of exceeding the LA sub-ACL to account for management uncertainty. The impacts of the proposed buffer and alternative buffers for the LA fishery are discussed in Section 5.4.2.2.1 below.

The separation of an ACL into two sub-ACLs with associated ACTs, one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC) is expected to have positive impacts on the scallop fishery and its subcomponents. The primary reason there will be two ACLs is so that AMs can be applied to the component of the fishery responsible for the excess catch. Thus, one component of the fishery will not shut another out or have to "pay for" an overage they did not cause. Because of the differences in management between LA and the LAGC fisheries, the sources of the management uncertainty are different for each fishery requiring different buffers. Establishment of unique buffers for each subcomponent will reduce the risk of each fishery exceeding its ACL, thus reducing the risk of overfishing the scallop resource. Lower risk of overfishing leads to positive impacts on the overall scallop yield, revenues and total economic benefits from the fishery.

The proposed action does not include any buffer for the LAGC fishery because this is an IFQ fishery and total catch from that fleet is more certain provided there is adequate enforcement. As a result, for the LAGC fishery sub-ACT would equal to the LAGC sub-ACL. The alternative option would set the LAGC buffer at 5% as discussed below in Section 5.4.2.2.2.

Because of the proposed ACL structure and buffers, this action will modify the allocation decision made in Amendment 11 to allocate 5% of the total projected catch to the general category vessels that qualify for a LAGC permit, 0.5% to limited access vessels that qualify for a LAGC permit, and 94.5% for limited access vessels. The intent of Amendment 11 was to allocate 5% to the general category fishery, and since that action did not anticipate ACLs, that allocation decision should be in terms of ACL, not ACT. According to the proposed action in Amendment 15, the allocations for each fishery (LA and LAGC fisheries) will be determined before buffers for management uncertainty are applied since the two fisheries have different levels of uncertainty. Specifically, general category vessels will be allocated 5.5% of the total ACL (5% for LAGC vessels and 0.5% for LA vessels that also qualify for a LAGC permit). As a result, the final allocations to the different fisheries, or ACTs, will not be based on the same percentages previously applied. Specifically, the LAGC ACT will likely to be more than 5% of the total ACT for the fishery, increasing the landings and the economic benefits for the participants of the LAGC fishery without reducing the benefits for the LA fishery. For example, if the total ACL was 57 million lb., 94.5% or 53.86 million lb. will be allocated to the LA fishery, and 5.5% or 3.14 million will be allocated to the LAGC fishery. If the buffer for the LA fishery was 15% (as an example) of the ACL, then the LA ACT would be 45.78 million lb. Since there is no buffer for the LAGC fishery, total ACT would be 48.92, and the share of the LAGC fishery in total ACT would be 6.4%. This would represent an increase of 0.45 million compared to allocation of 5.5% of the total ACT (TAC) determined in Amendment 11, or a $3.1 million increase in the revenue for the LAGC fishery compared to the status quo allocation. This increase is due to the increase of total ACT (TAC) with the new accounting system and because LAGC ACL= LAGC ACT rather than due to a decrease in the share of LA fishery in the overall ACL.

#### 5.4.2.2 Management uncertainty and Accountability Measures (AM) (Proposed Action)

The Act requires that each FMP implement accountability measures if the fishery exceeds its ACL. The primary AMs for the limited access and the limited access general category fisheries is the use of an ACT. The buffer between ACL and ACT would act as a proactive in-season AM.

Because each fishery is managed by different measures, this action proposes different AMs specific to the limited access and limited access general category fisheries. These measures should help prevent overfishing, hold the fishery accountable for any overages if they occur, and have positive economic impacts on the scallop fishery as a whole.

The overall impacts on the scallop fishery will depend on how the ACTs and proposed buffers affect the total scallop landings compared to status quo (No Action) landings. In general, the differences in the long-term yield streams are not expected to be significant, and the AMs (i.e., use of ACTs) are expected to have beneficial impacts on the resource by minimizing the risks due to scientific and management uncertainty. This in turn is expected to have positive impacts on the scallop landings and positive impacts on revenues, producer and consumer surpluses, and net economic benefits from the fishery in the long-term.

#### 5.4.2.2.1 Limited access fishery (Proposed Action, Option 1)

With respect to the limited access fishery (full-time, part-time, and occasional permits), the primary source of management uncertainty is the open area DAS allocation to full-time vessels. The effort from part-time and occasional vessels does not contribute enough to warrant serious consideration in the identification of sources of management uncertainty because there are very few vessels left in these categories. Increased catch from carryover DAS and vessel upgrades and replacements are sources of management uncertainty as well. There is a relatively high degree of certainty regarding the catch from access area trips since these trips are subject to a possession limit with high penalties for noncompliance. There could still be some imperfections in enforcement and monitoring of the access area trips, which should be recognized as a part of the management uncertainty. The proposed AMs will help to reduce the risks of exceeding ACLs due to the management uncertainty specific to the limited access fishery and will have positive impacts on the scallop yields and economic impacts from the fishery as a whole.

Proposed Action (Option 1) would set the LA ACT at an *F* with 25% probability of exceeding the LA portion of the total ACL (after removing incidental catch, general category ACL, and set-asides from the overall ABC = ACL) to account for the management uncertainty. Option 2 would identify a specific buffer based on results of new analyses of variability in estimate of LPUE (Option a), or projected LPUE compared to actual estimates from open area DAS (Option b). The buffer for both options would be deducted to determine the ACT for each fishery. The second option would allow more flexibility and adjust the buffers according to the current conditions in the fishery with positive economic benefits for the fishery.

Option 2 is complicated by the difficulty of separating the impacts of other factors (such as changes in scallop biomass) on LPUE from the impacts of management uncertainty. If factors other than management uncertainty such as an increase in the scallop biomass not captured by the biological projections are responsible for the increased LPUE, increasing the buffer between ACL and ACT will reduce scallop landings, revenues, producer and consumer benefits and total economic benefits from the scallop fishery. On the other hand, if this option leads to a more accurate estimate of management uncertainty and a lower buffer than Option 1, the economic benefits will be positive.

#### 5.4.2.2.1.1 Option to include a disclaimer for when LA AM would not be triggered even if LA sub-ACL exceeded (Proposed Action)

If overall F is re-estimated after the fishing year has ended and is more than one standard deviation below overall F for ACL (currently estimated to be 0.28), AMs for the limited access fishery would not be triggered. One standard deviation around ACL is 0.04 (range of 0.24 to 0.32). Therefore if re-estimated F is 0.23 or less AMs would not be triggered. This measure will prevent reduction in landings, revenues and total economic benefits from the scallop fishery when scallop biomass is larger than and/or fishing mortality is less than estimated. As a result, this action will have positive economic impacts both in the short- and in the long-term.

#### 5.4.2.2.2 General category fishery (Proposed Action, Option 1)

Since implementation of Amendment 11 there are three general category permit types: limited access general category IFQ permits, limited access incidental catch permits, and limited access Northern Gulf of Maine (NGOM) permits. This action proposes to account for catch from the incidental catch permits in setting OFL. As for the NGOM permits, catch will be accounted for in a separate ACL that is removed before the overall ACL for the directed fishery. Because resource in the NGOM is currently not incorporated in the overall assessment of the scallop resource, the ACL for this area can be treated separately as long as it is within the overall OFL for the resource. (The stock assessment currently underway is looking to incorporate NGOM scallops, so this may change in the future.)

The limited access general category IFQ fishery (LAGC) is under the directed ACL for the scallop fishery. The ACL for the directed fishery (LA and LAGC) is further divided into two ACLs. The LAGC ACL is equal to 5% of the total ACL for the general category qualifiers and 0.5% for the limited access vessels that also qualified for a LAGC permit. All vessels that qualify for this permit will be allocated an individual amount of quota based on their contribution factor (historical catch and number of years active in the general category scallop fishery).

Since the general category fishery is managed by IFQs, proposed action (Option 1) would set the buffer to zero and another option (Option 2) would include up to a 5% buffer to account for potential monitoring concerns, the IFQ carryover provision, and other implementation errors. The first measure would be more economically beneficial to the general category fishery by allowing a larger TAC and will increase revenues and profits from this fishery compared to status quo levels as explained in Section 5.4.2.1 above. In addition, if an individual vessel exceeds their IFQ or leased IFQ in a fishing year, their IFQ the following fishing year would be reduced by the same amount, reducing the risks of overfishing over the medium to long-term. On the other hand, Option 2 could have negative impacts on the fishery depending on the magnitude of the buffer and the percentage of the qualifiers that exceed their IFQs. A 5% buffer could have some economic benefits only if a large percentage of qualifiers exceed their IFQs, which is unlikely. This option would also have adverse economic impacts on the vessels that do not exceed their allocations.

#### 5.4.2.2.2.1 Trigger of LA AM disclaimer and allocations to the LAGC (Proposed Action)

If the LA AM disclaimer is triggered, 5.5% of the difference between the exceeded LA sub-ACL and the actual LA landings will be allocated to the LAGC fleet the following fishing year. This measure is consistent with Amendment 11 which allocates the LAGC fishery 5.5% of projected catch. If LA fishery catches more than projected because projections underestimated catch and biomass, this implies that LAGC TAC should have been higher and allocating 5.5% of the difference between the actual and projected catch provides that the LAGC fishery receives its 5.5% of the total catch. Therefore, this measure will have positive economic impacts on the LAGC vessels and will prevent LA fishery from receiving a higher share of the total catch than allocated to them by Amendment 15 provisions.

#### 5.4.2.3 Scallop ACL for other fisheries (Proposed Action)

Based on bycatch analyses and input from the PDT, there are no fisheries that catch an appreciable amount of scallops as discards. <u>Therefore, no scallop sub-ACLs in other fisheries will be considered at this time</u>. No Action is the only alternative considered in this amendment with no economic impacts on the scallop fishery.

#### 5.4.2.4 ACLs and Accountability Measures (AMs) for Yellowtail Flounder (Proposed Action)

Amendment 16 to the Multispecies FMP established an ACL sub-component for the scallop fishery because the scallop fleet accounts for over 5% of catch of YT flounder. As a result, this action includes accountability measures for a sub-ACL of YT flounder. The AMs under consideration for YT flounder may have impacts on the scallop resource and yield depending on which one is selected. Effort shifts are expected with all of the YT AMs under consideration, and effort shifts can have negative economic impacts if effort is shifted to less optimal areas and into seasons with lower meat weights.

##### 5.4.2.4.1 Seasonal closure of a portion of the stock area pre-identified as having high bycatch (Proposed Action – Option C)

The proposed action includes an accountability measure for a sub-ACL of yellowtail flounder that has been allocated to the scallop fishery under the multispecies plan. This measure proposes a seasonal closure of areas with high YT bycatch rates if the scallop fishery exceeds their YT sub-ACL allocation. With the proposed Action (Option C), the area(s) would be closed in the subsequent year for a specified period of time to only limited access scallop vessels and general category vessels would be exempt from YT accountability measures. This measure could increase fishing costs and have negative impacts on the scallop revenues and profits if the effort is moved to less productive areas with lower LPUE and to areas with a higher percentage of smaller scallops that are usually sold at a lower price compared to larger scallops. Implementation of the closure in the subsequent year, rather than in-season, will prevent derby style fishing and minimize the negative impacts on prices and revenues associated with it. Because one of the closure areas encompasses a large part of the Southern New England LAGC fishery, exemption of the LAGC trips from this accountability measure will prevent high distributional impacts for LAGC vessels.

The Council identified that scallop fishery should be allocated 100% of yellowtail 'needed' in 2010, and 90% in 2011 and 2012, and these allocations are included in the multispecies specification package in Multispecies Framework 44 as another sub-component" of the overall YT ACL. These values recognize the importance of yellowtail flounder to the scallop fishery and provide an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. Nevertheless, allocating 90% instead of 100% of the yellowtail needed as a bycatch for the scallop fishery will have some negative impacts on the revenues and total economic benefits from the scallop fishery if this threshold is exceeded and areas are closed. The values for 2011 and 2012 can be adjusted, however, if there is new information regarding scallop and yellowtail stocks, or based on access area measures in the scallop fishery for those years

Once the Regional Administrator determines that the YT sub-ACL is exceeded, the statistical areas specified in this action will be closed to scallop fishing on March 1 of the following fishing year and remain closed for the length of time specified in Table 28 – Length of time for SNE/MA YT AM closure based on percent of overage for SNE/MA YT stock area and Table 35 for the GB YT stock area when CA2 is open and Table 36 for GB YT stock area when CA2 is closed. Because the selected areas include high yellowtail bycatch and relatively low scallop landings compared to the other fishing areas, proposed action is expected to minimize potential reduction in scallop landings due to the yellowtail AMs. The extent of a potential reduction in scallop landings and revenues cannot be quantified with certainty, however, due to several factors that cannot be predicted beforehand.

Closure of the statistical areas for the SNE/MA YT stock area may have minimal impacts on vessels since those statistical areas are not in NCLA access area. Therefore, the scallop vessels can still take their access area trips to NCLA in the subsequent year and can fish in the open areas in New England and Mid-Atlantic not closed to scallop fishing. If the size composition of landings in those areas open to fishing is not significantly different than the composition of catch in those statistical areas, the impacts on total scallop landings, revenues and total economic benefits will be minimal. If the closed areas included larger scallops than the areas open to fishing, the impact of these closures on scallop revenues and total economic benefits will be negative.

Closure of the GB YT stock area will entail the closure of the entire of Closed Area II, however, in the subsequent year. This will affect the access area trips allocated to this area and depending on the length of closure, the access area trips may have to be taken in the later seasons when meat counts are lower compared to the summer months with negative impacts on landings, prices and revenues. Fishing costs can increase as well if vessels fish during less productive seasons and spend more time at sea in order to land same amount of catch. If however, it is possible to allocate more pounds (i.e., higher possession limit) for Closed Area II, or if more trips could allocated in other access areas in the next management action, this may offset some or all of the reduction in scallop revenues and total economic benefits due to GB YT stock area closures. In other words, a lot depends on how the next management action can take the impacts of the YT AMs into account and determine the open area DAS and access area trip allocations to minimize the impacts of the YT stock area closures in the subsequent years.

The alternative, Option A, proposes an in-season closure if the projected catch in both open and access areas exceeds a certain percentage of YT sub-ACL. Under Option B, if an YT sub-ACL is exceeded, pre-identified areas within a particular stock area would close to the scallop fishery in Year 3. Similar to the impacts of the proposed action (option C), these options could increase fishing costs and have negative impacts on the scallop revenues and total economic benefits if the effort is moved to less productive areas. In addition, Option A could lead to derby-style fishing behavior which can have negative impacts on prices and revenues if effort is merged into a smaller window of time when scallop meat weights are not optimal. Option B would prevent this effect by postponing the closure to year 3 and having the flexibility to re-open these areas later in the subsequent fishing year if the ACL was not exceeded by a large amount.

#### 5.4.2.4.2 In-season closure of entire YT stock area

This option proposes closing the entire yellowtail stock area to both LA and GC vessels when a YT sub-ACL has been reached. LAGC vessels would only be permitted to harvest their IFQ in other YT stock areas, and if the fleet had trips left in an access area, those trips would be moved to a different access area in a different YT stock area, if available. As a result, this option could create derby-style fishing behavior which can have negative impacts on prices and revenues if effort is merged into a smaller window of time when scallop meat weights are not optimal. It could also reduce landings, revenues and total economic benefits from the scallop fishery if it moves the effort to less productive areas with lower LPUE, and or to areas with a higher percentage of smaller scallops which would be sold at lower prices. Closing the whole yellowtail stock area will have greater negative impacts on scallop revenues and total economic benefits compared to options that would close only specific portions of areas with high yellowtail bycatch.

#### 5.4.2.4.3 Fleetwide maximum of DAS and percent of IFQ that can be used in a stock area

This alternative would institute a fleet maximum DAS that can be used in a stock area for year 3 to account for an overage of the YTF sub-ACL in year one. The PDT would determine how much the fishery exceeded the YT sub-ACL, then that amount would be removed from the YT sub-ACL for year 3. An estimate would be made in terms of how many DAS would be expected to catch the total YT remaining, and a fleet max would be implemented for that stock area for year 3. Similarly, a fleetwide maximum percentage of LAGC IFQ would be implemented for year 3. This alternative could reduce the negative impacts on scallop revenues, costs, and total economic benefits by preventing derby fishing and allowing more time for the scallop fleet to make adjustments for exceeding the yellowtail ACLs. This option could increase the enforcement costs, however, by making it necessary to monitor DAS-used by yellowtail stock areas.

#### 5.4.2.4.4 Individual maximum of DAS and percent of IFQ that can be used in a stock area

This alternative would institute an individual maximum number of DAS that can be used in a stock area for year 3 to account for an overage of the YTF sub-ACL in year one. An estimate would be made in terms of how many DAS would be expected to catch the total YT remaining and an individual maximum number of DAS would be instituted per vessel for that stock area for year 3. Similarly, for general category vessels, an individual maximum percent (or poundage) of IFQ that can be used in that stock area will be instituted in year 3. Individually based allocation of DAS will prevent derby fishing and allow vessels to trade area-specific DAS/IFQ, which would reduce distributional impacts with positive economic impacts for the participants. This option could allow vessels that fish for scallops in a particular stock area to continue fishing by trading DAS with another vessel that regularly fishes in a separate yellowtail area which is in closer proximity to its home port. This could minimize the costs of fishing and have positive impacts on profits, producer surplus and total economic benefits. This option could increase the enforcement costs, however, by making it necessary to monitor individual DAS-used or poundage (for general category vessels) by yellowtail stock areas.

#### 5.4.2.5 Timing of ACL monitoring and triggering AMs

Once this action is implemented, if an ACL (LA sub-ACL, LAGC sub-ACL, or the YT sub-ACLs allocated to the scallop fishery) is exceeded, AMs are triggered. The options include AMs being activated at the start of the subsequent fishing year (proposed action), or two years after the fishing year. Due to the time lags in monitoring of some aspects of the ACL program and scheduling of Council meetings, it may not be feasible that AMs are effective right at the start of a subsequent fishing year. A timely adjustment of the ACTs will reduce the negative impacts and risks of overfishing on the scallop resource sooner. If this prevents a decline in the scallop biomass and yield over the long-term, the economic benefits of instituting AMs in the next fishing year will exceed the economic benefits of adjusting the allocations in a later fishing year. On the other hand, postponing the adjustment for one year will provide time for the scallop vessels to adjust their business plans to a reduction in allocations due to exceeding ACLs with positive economic benefits.

As for the YT sub-ACLs the timing is a little more complex. The in-season AM options could be implemented the same year, but the ones that require review at the end of the year will likely not be able to be implemented until the start of year 3. The economic impacts of timing for yellowtail AMs were discussed above in Section 5.4.2.4.1 above.

### 5.4.3 Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource

Amendment 15 alternatives include permit stacking and DAS and access area trip leasing in order to address excess capacity in the sea scallop fishery. Capacity could be defined in several ways relative to technical efficiency, costs of production, economic aspects, or social constraints. From a technical perspective, capacity may be defined as the maximum output that could be obtained by the fixed inputs (vessels, in this case), using the variable factors of production such as DAS and crew size when the availability of these factors are not restricted. Capacity would also vary with the level of resource biomass and could be evaluated in relation to the sustainable scallop harvest.

Capacity and technical inefficiency in the sea scallop fishery has been estimated using data envelopment (DEA) and stochastic production frontier (SPF) models (John Walden, 2006 and Jim Kirkley et al., 2004). The economic analyses in this document do not re-estimate the excess capacity in the scallop fishery, but provide a summary of the results of a National Marine Fisheries Service report (NMFS, 2008) that evaluated the excess capacity in 25 U.S. fisheries including the Sea Scallop fishery as follows:

- The 2008 Report to Congress by NMFS employed an output-based definition of the capacity in terms of the potential harvest of a fishing vessel or fleet of vessels. From this perspective, the report defined harvesting capacity as the maximum amount of fish that the fishing fleets reasonably expected to catch fully utilizing the machinery and the equipment given the abundance of the fish stocks, availability and skill of the crew, fishery regulations and other relevant constraints.
- The report used data envelopment analysis (DEA) and provided higher and lower

estimates for capacity defined in several ways. The higher estimates assumed that all estimated technical inefficiency was removed and the variable inputs are fully utilized, while the lower estimates were based on actual level of technical efficiency.

- The sea scallop fishery was one out of 25 fisheries examined in this report and was evaluated in terms of excess capacity, overcapacity and overharvest rates. The results of the report showed that the Atlantic Sea scallop fishery in the Northeast US had a 28% lower excess capacity and 47% higher excess capacity in 2004. When capacity is evaluated in excess of the quotas, i.e., overcapacity, the scallop fishery had a 56% (lower) to 67% (higher) overcapacity in the same fishing year. The harvests in the scallop fishery were estimated to be 38% in excess of the target harvest levels using the 2004 data.

In addition to the excess capacity in the fishery, actual harvests could be in excess of the target harvest levels due to biological uncertainty resulting in a lower estimate of target harvest levels than could be sustained by the scallop biomass. Similarly, the harvest levels could exceed the target levels due to the management uncertainty which makes it difficult to predict actual landings of vessels with the specific days-at-sea allocations. As a result, it is not possible to accurately determine if overcapacity exists by comparing only actual harvest with the target harvest levels. Since the sea scallop fishery is managed by effort controls in the open areas (days-at-sea) and with individual trip allocations in the access areas, the existence of excess capacity would not by itself be a cause of overharvests if there were no scientific uncertainties in determining the target fishing mortality, if there was no latent effort in the fishery and if the harvesting capacity of each vessel could be estimated accurately for each level of DAS allocation.

However, a historical examination of the trends in terms of the number of vessels, DAS-used, and vessel characteristics of full-time limited access vessels that participated in the sea scallop fishery since 1994 indicates the existence of excess capacity in the fishery from a technical efficiency perspective at the current scallop stock harvest and biomass levels.

Table 84 shows that there has been a steady decline in the DAS-used per full-time limited access vessel since 1994 due to the effort reduction and area rotation policies implemented by the various Scallop Amendments and Frameworks. The DAS allocation per full-time vessel declined from 204 days-at-sea in 1994 (Amendment 4) to less than 110 days-at-sea (Framework 18) for the 2006-2007 fishing years. As a result, average DAS-used declined from 161 days in 1994 to 95 days in 2007, while at the same time the number of full-time vessels participating in the fishery increased from about 210 in 1994 to 315 vessels in 2007. The reduction in effort was even greater, from an average of 180 days in 1994 to 93 days in 2007, for 124 relatively larger vessels that fished every year during the last 14 years from 1994 to 2007 (Table 84). If there were no restrictions on effort, it is evident that most vessels would use more DAS than they did in the past when DAS allocations were higher, rather than operating two or more vessels with smaller DAS allocations and incurring overhead costs such as insurance for each vessel. This would reduce the cost per pound of scallops and increase profits per vessel. The fact that a smaller number of vessels could harvest the same amount of scallops at a given level of scallop biomass by using more days-at-sea than they are currently allocated is indicative of excess technical capacity in the scallop fishery. It must be cautioned, however, that this is a straightforward scenario analysis and is not intended to estimate a technically efficient level of DAS-used for the scallop fleet.

**Table 84. Vessel size, DAS-used and LPUE by years fished by full-time limited access vessels**

| FISHYEAR | Years Fished | Number of vessels | Average GRT | Average HP | Average DAS-used | Average LPUE |
|---|---|---|---|---|---|---|
| 1994 | Less than 14 Years | 86 | 143 | 727 | 135 | 591 |
| | 14 years | 124 | 168 | 899 | 180 | 519 |
| 1994 Total | | 210 | 158 | 829 | 161 | 543 |
| 1999 | Less than 14 Years | 92 | 141 | 706 | 88 | 917 |
| | 14 years | 124 | 168 | 905 | 109 | 994 |
| 1999 Total | | 216 | 157 | 820 | 100 | 963 |
| 2003 | Less than 14 Years | 155 | 136 | 678 | 105 | 1,588 |
| | 14 years | 124 | 167 | 905 | 117 | 1,867 |
| 2003 Total | | 279 | 150 | 779 | 110 | 1,713 |
| 2004 | Less than 14 Years | 171 | 135 | 690 | 95 | 1,941 |
| | 14 years | 124 | 167 | 904 | 97 | 2,371 |
| 2004 Total | | 295 | 149 | 780 | 96 | 2,124 |
| 2005 | Less than 14 Years | 188 | 133 | 702 | 77 | 1,775 |
| | 14 years | 124 | 166 | 907 | 83 | 2,004 |
| 2005 Total | | 312 | 146 | 783 | 79 | 1,866 |
| 2006 | Less than 14 Years | 190 | 133 | 709 | 78 | 1,804 |
| | 14 years | 124 | 166 | 907 | 86 | 2,087 |
| 2006 Total | | 314 | 146 | 787 | 81 | 1,918 |
| 2007 | Less than 14 Years | 191 | 134 | 716 | 97 | 1,602 |
| | 14 years | 124 | 166 | 907 | 93 | 1,884 |
| 2007 Total | | 315 | 147 | 791 | 95 | 1,714 |

**Excluding outliers and LPUE data <400 pound*

Reducing excess capacity by having a smaller number of vessels harvesting ACT would increase technical efficiency, reduce fishing costs, and increase profits and producer surplus. This would also help to reduce congestion at the docks, and reduce the waste of fuel, electricity and lower maintenance costs. Permit stacking and leasing options could lead to increased safety if the open area DAS and access area trips are fished on newer boats. On the other hand, permit stacking and/or DAS leasing could have adverse economic impacts on vessels that are not involved with DAS transfers if no adjustments are made to transferred DAS to keep the fishing mortality constant. Permit stacking and/or DAS leasing could also have negative impacts on employment. These impacts are estimated by the IMPLAN model (Section 5.4.3.9) and discussed in the Social Impact Analysis (Section 5.5).

### 5.4.3.1 Economic Impacts of No action alternative (Alternative 3.3.1)

Proposed action for this measure is equivalent to No Action. No Action would not implement any measures to reduce capacity in the limited access scallop fishery. All current restrictions on effort transfers would remain in place. This means that no additional measures would be implemented to address excess capacity in the limited access scallop fishery, and as a result, the economic benefits from the scallop resource will fall short of optimum levels. The fishing costs will be higher compared to the stacking/leasing options because the vessels owners will still have to use two individual vessels to fish in the open and access areas rather than to combine their allocations (up to two permits –double of the allocations) on a single vessel saving on the fixed and some variable costs. Therefore, the producer surplus and profits derived from the scallop fishery will be less than they could be if the vessels allowed to stack permits or leased DAS/trips from other vessels. On the other hand, under no action the employment levels will probably be higher both in the harvesting sector and related waterfront businesses. With the No Action alternative some of the adverse distributional impacts of stacking on the vessels that are not involved in permit stacking/leasing would also be prevented. These economic impacts of the permit stacking and leasing alternatives compared to the proposed action (No Action) are analyzed in Sections 5.4.3.2 to 5.4.3.7.

### 5.4.3.2 Overview of aggregate economic impacts of the permit stacking/leasing alternatives

#### 5.4.3.2.1 Introduction

This group of alternatives would allow a single limited access vessel to have up to two limited access permits (3.3.2.1) subject to fishing power and mortality adjustments. Specifically, the vessel would be permitted to fish the allocations for both permits. Idled vessels could be sold or scrapped and future investments could be put into one vessel instead of two. Stacking of two permits on one vessel or leasing of DAS and access area trip allocations is expected to reduce fishing costs and increase profits. Limiting stacking to two limited access permits would prevent excessive consolidation in the fishery compared to unrestricted permit stacking. Similarly, leasing alternatives restrict leasing of open area DAS and access area trips to twice the allocation.

The permit stacking and leasing alternatives are expected to provide increased flexibility for vessels to adjust their effort to changes in scallop biomass, management measures, fishing costs, and market conditions. This will result in a smaller fleet size, improved technical efficiency, lower fishing costs, higher profits, larger producer surplus, and greater total economic benefits for the scallop fishery.

These alternatives could lead to an increase in fishing effort and mortality if the differences in the fishing power of the vessels and increased productivity following the stacking/leasing are not taken into account. In order to address the concern that stacking/leasing could potentially increase capacity and fishing mortality, the Council is considering various alternatives for adjusting stacked permits or leased DAS for fishing power and also for a second mortality adjustment that would be applied to all transactions within a range of 5% to 11% (Alternative 3.3.2.2.1).

If the proposed fishing power and mortality adjustments are effective in keeping the fishing mortality constant, permit stacking and leasing alternatives will not affect scallop landings and prices, thus will have no significant impacts on the consumer benefits and the total fleet revenue. The fishing power and mortality adjustments are expected to reduce total open area DAS-used and lower the trip costs for the fleet if the DAS is transferred from vessels with a smaller HP and length to larger vessels that can land the same amount scallops in a shorter time. If the DAS are transferred from a larger boat to a smaller boat there will be no adjustment for the fishing power, thus there will be no decline in total DAS-used. The total DAS-used or effort will decline in both cases if an additional mortality adjustment is applied to DAS transfers.

In the case of access area trip stacking or leasing, there will be no adjustment for fishing power or mortality given that the landings from these trips are restricted by the possession limit. Overall DAS-used for fishing in the access areas could still decline if the trips are leased or stacked on more powerful vessels with a higher LPUE. As a result, the overall trip costs for the fleet are estimated to be lower because of stacking or leasing.

The most significant benefit of permit stacking would be a reduction in the fixed costs, resulting in higher profits and a larger producer surplus for the scallop fishery. Although the results of the analyses are discussed in terms of permit stacking, similar conclusions would be valid for the impacts of leasing alternatives with some qualifications. In the case of leasing, the fixed costs would still be lower for the vessels that transfer their allocations, but the vessel still needs to be maintained and the owner would incur some insurance costs. Therefore, the economic benefits would be lower in the case of leasing compared to permit stacking.

The economic impacts of permit stacking and leasing options will vary according to the proportion of the catch from open areas versus the access areas since no adjustment will be made for the transfers of access area allocations (in pounds) . The economic impacts will also depend on the factors that impact trip costs, such as oil and food prices, and on the level of and changes in fixed costs (such as insurance costs) as a result of permit stacking or leasing of DAS and trip allocations. The extent of impacts on the producer surplus and total economic benefits will also depend on the degree of consolidation of the fishing effort and the number of active vessels participating in the fishery after permit stacking and/or leasing. Since some of these factors including open area DAS and access area trip allocations will change according to the scallop resource conditions, and other factors such as the number of vessels that will resort to permit stacking and/or leasing cannot be predicted with certainty, the economic impacts of the stacking and leasing options are analyzed using a simulation model and different scenarios with stacking/ leasing.

#### 5.4.3.2.2 Economic impacts of permit stacking

The economic impacts of the permit stacking and leasing options are analyzed using two different scenarios with permit stacking/leasing, including a maximum stacking scenario such that the number of vessels in the fishery is reduced by half (Scenario 1, Section 5.4.3.5), and another one involving stacking by the multi-vessel owners only (Scenario 2, Section 5.4.3.6). These scenarios are constructed to estimate maximum potential impacts on fishing mortality with and without adjustments for fishing power and efficiency. It is also possible that a smaller number of vessel owners (compared to the number of vessels in Scenario 1 or 2) may resort to stacking in the short-term or that the permits are stacked within the same HP-length group to avoid fishing power adjustment. There is no question that maximum stacking scenarios could become a reality over time if the vessel owners could gain from stacking two permits on one vessel and if the risks associated with stacking are not significant.

The simulation model includes a production function, trip and fixed cost equations, lay-system, and definitions for producer surplus and profits presented in Appendix III. This model takes into account the constraints that are placed on the number of permits that could be stacked and the impacts of fishing power and mortality adjustments. The economic analysis includes a discussion of distributional impacts on vessels that are not involved in stacking and/or leasing.

The stacking alternatives limit stacking to two permits only in order to prevent excessive consolidation in the fishery (Alternative 3.3.2.1). The results of the scenario analyses with stacking of permits on more powerful/efficient vessels indicate that owners could reduce their fishing costs and increase their profits significantly by doubling the open area DAS and access area trips on one boat. If there were no limits on the number of permits stacked and if consolidation were greater, the profits and the producer surplus for the fishery could increase more but that would have greater negative impacts on employment in the harvesting sector and other sectors supported by the scallop fishery.

The following summarizes the economic impacts of these and other stacking, fishing power, and overall mortality adjustment scenarios:

- The economic impacts of a maximum stacking scenario are analyzed in Section 5.4.3.5, and the impacts of permit stacking by multi-boat owners are summarized in Section 5.4.3.6. The analyses include 255 limited access dredge vessels that had a permit in 2007. The scenarios are constructed using the biomass conditions, prices and costs that were experienced in the 2007 fishing year. It was assumed that each vessel would get an open area allocation equal to 51 days, and 5 access area trips with an 18,000 pound possession limit on each. Under the status quo conditions, total landings of these vessels would be 42.3 million pounds and the total revenues from scallops would equal to $275 million, which is close to the actual numbers materialized in 2007. The production model is used to project open area landings with and without DAS transfers and adjustments for fishing power and mortality using the characteristics of each limited access full-time dredge vessel. The middle blocks in Table 85 and Table 86 show the results for stacking if a fishing power adjustment is only applied to the transfers, and the bottom block shows the results with both fishing power and a 9% mortality adjustment.

- For the maximum stacking scenario (Scenario 1) it is assumed all permits are stacked so that the number of vessels that remain in the fishery declines from 255 to 128. Total scallop landings from open and access areas would increase by 2% if open area DAS transfers *are adjusted for fishing power only*. Open area landings would increase by 4.6% and access area landings would stay the same as a result of permit stacking. Overall fleet trip costs would decline by 4% and fixed costs by 24% due to stacking, resulting in an increase in profits by 30% if the savings in trip costs go to the crew shares or by 38% if the savings in trip costs leads to an increase in boat shares by a modification of the lay system. Producer surplus is measured by the difference of total revenue from variable costs and it is expected to increase by 3% from about $240.2 million to $247.3 million after permit transfers and/or leasing of open area DAS and access area trip allocations. These results do not include any mortality adjustment for DAS transfers.

- For the same scenario (Scenario 1), if a 9% mortality adjustment is applied to the open area DAS transfers, the landings and revenues would stay at the same levels prior to the stacking/leasing, but the trip costs would decline by 6% and the fixed costs would decline by 24%. As a result, fleet profits would increase by 26% if the savings in trip costs go to the crew shares or by 30% if the savings in trip costs lead to an increase in boat shares through a modification of the lay system.

- There would a slight increase in producer surplus of 1% from $240.2 million to 242.2 million after stacking. This increase is just for one year, and the cumulative long-term producer surplus and total economic benefits would be larger over the long-term. For example, if the producer surplus was $2 million larger each year, cumulative present value of producer surplus over a 20 year period would be about $30 million larger compared to producer surplus with no stacking. Furthermore, producer surplus does not include the savings in fixed costs because of the way producer surplus is defined in the short-term as the difference between the total revenue (TR) and the total variable costs (TVC). Over the long-term, if the number of vessels is considered as a variable input, than the costs of operating two separate vessels versus a single vessel could be included in the producer surplus as well. Table 87 shows that over a 10 year period, the increase in producer surplus including the savings in the fixed costs would be $165.83 ($139.61) million and over a period of 20 years it would be $276.27 ($201.74) million at a 3% (7%) discount rate. In the absence of change in landings there would be no change in the consumer surplus, thus total benefits net of no action (no stacking) would equal to the change in producer surplus. These numbers correspond to a scenario with maximum stacking, however, and a lower consolidation would result in smaller economic benefits as the results of Scenario 2 show (Table 87).

**Table 85 - Scenario 1: Permit-Stacking/DAS plus access area leasing – Change in landings, DAS-used, revenues and costs (Assuming $6.50 price per pound of scallops)**

| Scenario | Data | Total | % Change from Status Quo |
|---|---|---|---|
| Status quo (255 vessels) | Scallop landings | 42,377,553 | |
| | Scallop revenue | 275,454,095 | |
| | Trip costs | 35,248,119 | |
| | Fixed costs | 64,608,838 | |
| | Net crew income | 113,878,537 | |
| | Profits | 60,333,271 | |
| | Producer surplus | 240,205,976 | |
| Stacking/leasing Fishing Power adjustment (128 vessels) | Scallop landings | 43,268,297 | 2% |
| | Scallop revenue | 281,243,932 | 2% |
| | Trip costs | 33,994,859 | -4% |
| | Fixed costs | 49,206,887 | -24% |
| | Net crew income | 118,621,574 | 4% |
| | Profits (Crew income increase) | 78,689,331 | 30% |
| | Profits (Crew income same) | 83,432,367 | 38% |
| | Producer Surplus* | 247,249,073 | 3% |
| Stacking/leasing Fishing Power + 9% Mortality adjustment (128 vessels) | Scallop landings | 42,350,325 | 0% |
| | Scallop revenue | 275,277,114 | 0% |
| | Trip costs | 33,105,995 | -6% |
| | Fixed costs | 49,206,887 | -24% |
| | Net crew income | 116,264,489 | 2% |
| | Profits (Crew income increase) | 75,968,462 | 26% |
| | Profits (Crew income same) | 78,354,414 | 30% |
| | Producer Surplus* | 242,171,119 | 1% |

*Note: Producer Surplus does not include the savings in fixed costs.*

- Table 86 shows the results of Scenario 2 with multi-boat owners stacking permits. The majority of the vessels (202 out of 255 full-time) in the scallop fishery are owned by multi-boat owners. As a result, a permit stacking scenario by multi-boat owners has similar economic impacts compared with the maximum stacking scenario. The number of active FT dredge vessels would decline to 154 vessels, and the overall fleet profits would increase by 22% to 26% depending on whether the savings in trip costs go to the crew or to the boat owners. The producer surplus would increase by 2% if there is no mortality adjustment and by 1% with a 9% mortality adjustment in addition to the fishing power adjustment.

**Table 86 - Scenario 2: Permit-Stacking/DAS plus access area leasing – Change in landings, DAS-used, revenues and costs (Assuming $6.50 price per pound of scallops)**

| Scenario | Data | Total | % Change from Status Quo |
|---|---|---|---|
| Status quo (255 vessels) | Scallop landings | 42,377,553 | |
| | Scallop revenue | 275,454,095 | |
| | Trip costs | 35,248,119 | |
| | Fixed costs | 64,608,838 | |
| | Net crew income | 113,878,537 | |
| | Profits | 60,333,271 | |
| | Producer surplus | 240,205,976 | |
| Stacking/leasing Fishing Power adjustment (154 vessels) | Scallop landings | 43,093,378 | 2% |
| | Scallop revenue | 280,106,960 | 2% |
| | Trip costs | 34,147,619 | -3% |
| | Fixed costs | 51,369,427 | -14% |
| | Net crew income | 117,785,317 | 3% |
| | Profits (Crew income increase) | 75,948,347 | 26% |
| | Profits (Crew income same) | 79,885,127 | 32% |
| | Producer Surplus* | 245,959,340 | 2% |
| Stacking/leasing Fishing Power + 9% Mortality adjustment (154 vessels) | Scallop landings | 42,358,350 | 0% |
| | Scallop revenue | 275,329,274 | 0% |
| | Trip costs | 33,433,911 | -5% |
| | Fixed costs | 55,679,696 | -14% |
| | Net crew income | 115,899,964 | 2% |
| | Profits (Crew income increase) | 73,769,722 | 22% |
| | Profits (Crew income same) | 75,791,148 | 26% |
| | Producer Surplus* | 241,895,362 | 1% |

** Producer surplus does not include the savings in fixed costs.*

**Table 87. Change in Producer surplus, savings in fixed costs and total benefits (in $ million and 2008 prices)**

| Scenarios | Change in producer surplus | Savings in fixed costs | Producer surplus including fixed costs |
|---|---|---|---|
| Scenario 1 - All vessels stack (50%) | 1.96 | 15.40 | 17.36 |
| Cumulative Present Value | | | |
| 10 years - 3% discount rate | 18.68 | 146.77 | 165.83 |
| 10 years - 7% discount rate | 15.73 | 123.56 | 139.61 |
| 20 years - 3% discount rate | 31.12 | 244.51 | 276.27 |
| 20 years - 7% discount rate | 22.72 | 178.55 | 201.74 |
| Scenario 2 - Only multi-vessel owners stack | 1.69 | 10.62 | 12.31 |
| Cumulative Present Value | | | |
| 10 years - 3% discount rate | 16.11 | 101.21 | 117.32 |
| 10 years - 7% discount rate | 13.56 | 85.21 | 98.77 |
| 20 years - 3% discount rate | 26.83 | 168.62 | 195.45 |
| 20 years - 7% discount rate | 19.59 | 123.13 | 142.72 |

- Another scenario would be to assume that permits are stacked on the vessels within the same HP-Length group to avoid payment in terms of reduced DAS due to the fishing power adjustment. The transfers of DAS would still be subjected to a mortality adjustment to reduce the risks of overfishing and to prevent vessels that are not involved in stacking from being negatively impacted. Therefore, DAS transfers among the vessels within the same fishing power group would still reduce total DAS-used and trip expenses as a result of fishing on a better boat with fewer DAS, although overall reduction in fleet DAS-used and in trip costs and increase in the producer surplus would be less compared to the scenario where permits of smaller vessels are stacked on the larger boats. The impacts on profits from stacking are still expected to be positive due to the savings in fixed costs.

- Yet, a less likely scenario is a transfer of DAS or permits from larger boats to less efficient vessels. Permit stacking from a more powerful vessel to a smaller vessel would probably not increase profits to the same extent because there would be no increase in the number of DAS to compensate for the reduced efficiency, i.e., LPUE, of the smaller/older vessel. Thus, fishing the same number of days on a less efficient boat would lower the landings and revenues of the owner who stacked the permits on the smaller vessel. In addition, if all transfers of DAS are subject to a mortality adjustment, total DAS-used and landings could decline further. On the other hand, the transfers of this nature may still be profitable if the savings in fixed costs and trip expenses outweigh the loss in revenues due to the decline in landings and revenues.

- In reality, permit stacking may involve a smaller number of vessels in the short-term with smaller impacts on employment and economic benefits (Table 88 and Table 89). There may be some advantages to having two boats that could fish in the access areas, for example, before the yellowtail TAC is reached and the area is closed. In addition, some owners have mortgages on their boats or have invested a considerable sum in their boats already and may not be able sell the extra boats at the prices they like in the short-term and may wait on stacking their permits. If instead of a 50% stacking that reduces the number of vessels in the fleet by half, it is assumed that only 25% of the vessels in the fleet will stack their allocations, the economic impacts shown for the maximum stacking scenarios will decline by approximately by 50%. For example, in the case of 25% stacking, the overall fleet profits would not increase by 30%, but by 15%. The profits of the individual vessels could still increase by a larger amount depending on which vessel's permits are stacked.

- Permit stacking and the resulting consolidation could impact vessel prices depending on the degree of consolidation and the characteristics of the vessels that exit the fishery. Usually older and less efficient vessels are expected to be removed from the fishery as a result of permit stacking, and if these vessels are scrapped, there will be little impact if any on the vessel prices. On the other hand, if some of these vessels are put on the market, there could be some negative impact on vessel prices, but not necessarily for the vessels in the scallop fishery since those vessels could be sold to other fisheries and to people in other geographic areas. Because two permits could be stacked on one vessel and this would increase profitability from each permit, permit staking could lead to an increase in the value of permits.

- There could be some adverse distributional impacts on the vessels that are not involved in permit stacking/leasing if fishing mortality increases as result of open area DAS transfers as discussed in the following sections. Permit stacking could also have some negative impacts on employment in the harvesting sector depending on the degree of consolidation of the scallop fleet. The impacts of permit stacking on fleet size and on employment in the harvesting sector are shown in Table 88 and Table 89 using various assumptions of stacking from 25% to 50%. If the number of limited access vessels declined by 50% (maximum stacking), the employment in the scallop fishery is estimated to decline by 20%.

- The impacts on regional incomes and employment are analyzed in Section 5.4.3.9 using the IMPLAN model. The results show that if all vessels stack, there will be a slight decline in total regional sales, a small increase in personal incomes and a decline of 252 jobs supported by the fishery. For the most part, the jobs that are expected to be lost are related to scallop harvesting (crew) and manufacturing (boat yards). New jobs that are created as a result of higher overall income levels in the economy under all four scenarios will be in the finance, insurance and real estate fields as well as general services like hospitals and hotels. These impacts will be smaller if there is less consolidation; for example if only 25% of the vessels stack. The Social Impacts section of this document provides a comprehensive analysis of the potentially adverse impacts of permit stacking on fishing communities (Section 5.5).

**Table 88 – Impacts of permit stacking on the scallop fleet size**

| Scenarios | Number of Multi-boat owners | Number of Single-boat owners | Number unknown | Total FT Dredge Vessels | % Change |
|---|---|---|---|---|---|
| Status Quo | 202 | 46 | 7 | 255 | |
| Scenario 1 - All vessels stack (50%) | 101 | 23 | 4 | 128 | -50% |
| Scenario 2 - Only multi-vessel owners stack | 101 | 46 | 7 | 154 | -40% |
| Scenario 3- 25% of all vessels stack | 152 | 35 | 5 | 191 | -25% |
| Scenario 4 - 25% of multi-vessel owners stack | 152 | 46 | 7 | 205 | -20% |

**Table 89 – Impacts of permit stacking on employment (number of crew)**

| Scenarios | Number of Multi-boat owners | Number of Single-boat owners | Number unknown | Total FT Dredge Vessels | % Change |
|---|---|---|---|---|---|
| Status quo | 852 | 194 | 30 | 1076 | |
| Scenario 1 - All vessels stack (50%) | 682 | 155 | 27 | 864 | **-20%** |
| Scenario 2 - Only multi-vessel owners stack | 682 | 194 | 30 | 905 | **-16%** |
| Scenario 3- 25% of all vessels stack | 767 | 175 | 27 | 968 | **-10%** |
| Scenario 4 - 25% of multi-vessel owners stack | 767 | 194 | 30 | 991 | **-8%** |

The economic impacts of the permit stacking, fishing power adjustment, and mortality adjustment alternatives are analyzed in detail in Section 5.4.3.3 to Section 5.4.3.7 using various scenario analyses with stacking combined with adjustments for fishing power and mortality. The economic impacts of the leasing alternative (Alternative 3.3.3) are analyzed in Section 5.4.3.8. The impacts on regional incomes and employment are analyzed in Section 5.4.3.9 using the IMPLAN model.

#### 5.4.3.2.2.1 Economic impacts of fishing power and mortality adjustments

The impacts of a fishing power adjustment and a second 'mortality' adjustment is analyzed as a part of the scenario analyses with permit stacking and DAS leasing options. Alternative 3.3.2.2.1 would allow stacking among scallop vessels as long as open area DAS transfers are adjusted for the differences in the fishing power of the vessels. An adjustment would be made to the "stacked" permit only if the fishing power of that second permit is higher than the original permit. This adjustment will help to prevent an increase in fishing mortality and a consequent decline in stock biomass as a result of DAS transfers. This will prevent a reduction in scallop yield and total economic benefits in the future years and will minimize adverse impacts on vessels that are not engaged in permit stacking or DAS leasing. Because there will be no fishing power adjustment if a smaller vessel stacked its permit or leased allocation from a larger vessel, the sum of landings from these two vessels will decline, reducing overall landings and revenues. An example with such transfers is provided in Appendix III). The proposed fishing power adjustment is nonsymmetrical in order to prevent an increase in effort from manipulating vessel characteristics to place it into a lower HP-length category.

In addition to the fishing power, Amendment 15 alternatives include a second "mortality adjustment" in the range of 5% to 11% for the open area DAS transfers to recognize that there are other factors that influence LPUE that cannot be adjusted by the fishing power alone. These factors include the increase in efficiency when DAS allocations are combined on one vessel, or when DAS is transferred to a newer vessel with more skillful captain and the crew or other technical aspects that make the vessel more efficient regardless of its length and horsepower (Section 5.4.3.3.3). According to the production model estimates, permit stacking could lead to an increase in landings and fishing mortality of 5% even if the DAS transfer took place among boats with exactly the same HP and length. For this reason, a 9% mortality adjustment is required to make permit stacking/leasing neutral in terms of open area fishing mortality, with a confidence interval of 7% to 11%. A 5% mortality adjustment lies outside of the 95% confidence interval and does not take into account other factors that could increase fishing mortality further, including transfer of DAS to a newer vessel with more skilful crew. It was also discussed that this adjustment could be re-evaluated after Amendment 15 to determine if 9% was the appropriate value to use and if not could be adjusted by framework.

Although a mortality adjustment from 7% to 8% is within the 95% confidence interval estimated from the production model, the risks of overfishing in the open areas would be larger if overall LPUE on the vessel that receives the allocation/or permit is considerably higher than the vessel that makes the transfer. As discussed in Section 5.4.3.3.3, scallop fishing mortality could increase even after the transferred days-at-sea are reduced by the midpoint estimate, i.e., by a 9% mortality adjustment. Therefore, a mortality adjustment within range of 10% to 11% would minimize the risks of increasing mortality due to an increase in efficiency from a variety of factors that are not taken into account in the production model such as vessel's age, platform and/or crew skill level.

- Not applying a mortality adjustment or applying one lower than necessary would have adverse impacts on other vessels, especially on the ones that are not involved in stacking, as discussed in Section 5.4.3.5.3. For example, if an adjustment was made for fishing power but not for DAS and the scallop mortality increased by 4%, leading to a reduction in DAS allocations in the next period, average scallop revenue per vessel could decline by $23,200.
- On the other hand, a mortality adjustment would lead to a reduction in total landings in the *unlikely case* of permit stacking between vessels with identical LPUE and vessel characteristics and if more flexibility from higher DAS allocations does not lead to any significant efficiency gains. For example, if the mortality adjustment is applied to transfers of open area DAS between identical boats with exactly the same average LPUE and if there is no efficiency gains from fishing a larger allocation on one vessel instead of with two vessel, then a 9% mortality adjustment would reduce the overall landings and revenues compared to levels before stacking. For example, an owner of two identical vessels that lands 75,000 pounds from each vessel at a price of $7 per pound before stacking would experience a reduction of 9% in its landings (6,750 lb) and lose $47,250 in revenue. Permit stacking is still expected to increase profits, however, due to the savings in fixed costs and trip expenses from fishing with one vessel. For example, if the fixed costs on these two identical boats were $250,000 each (average per vessel in 2007 including the vessel improvement costs) totaling $500,000, the savings would amount to $125,000 if the total fixed costs could be lowered by 25% and $165,000 if they are

reduced by 33% as a result of stacking. In addition, there would be savings in trip costs as a result of fishing with less DAS due to the mortality adjustment.

- Given that not too many vessels in the scallop fleet are exactly alike, it is expected that open area DAS will be transferred to the more efficient or newer vessels and there will be efficiency gains from combining allocations on one vessel. Therefore, it is unlikely for the mortality adjustment to reduce overall scallop landings in any significant way. If a reduction in mortality occurred as a result of permit stacking, the scallop yield and allocations would be impacted positively in the next period and will benefit all vessels whether or not they are involved in stacking or leasing.

Alternative 3.3.2.2.2 would allow permit stacking without a fishing power adjustment if the baseline specifications of the permits involved meet the current vessel replacement criteria. Although such transfers would reduce the risk of increasing fishing capability to a certain extent, this alternative will not provide the flexibility to stack permits on vessels that do not meet this classification or to transfer DAS in the most economically optimal way. As a result, the savings in trip and fixed costs and the overall increase in economic benefits will be smaller. In addition, if no mortality adjustment was applied to these transfers, the fishing mortality could increase reducing the scallop yield and revenues in the future years with adverse economic impacts on vessels that did not stack permits.

Alternative 3.3.2.2.3 would allow permit stacking between any vessels, but no adjustment would be applied if vessels are from the same upgrade restriction category, and if vessels are from different categories the same power adjustment described in Section 5.4.3.3.2 would be applied to stacked permit, if the permit is from a higher upgrade category. This alternative is not as restrictive as in 3.3.2.2.3 and would allow vessels in the same upgrade category to transfer DAS without any fishing power adjustment. Fishing mortality could still increase with this method although the increase would be limited to a certain extent. In addition, if no mortality adjustment was applied to these transfers, the fishing mortality could increase, reducing the scallop yield and revenues in future years with adverse economic impacts on vessels that did not stack permits.

Alternative 3.3.2.2.4 would restrict a trawl vessel to convert back to a trawl permit if it stacks with a dredge vessel in order to minimize uncertain impacts of these ongoing transfers on fishing mortality.

Section 5.4.3.3 below presents the methods for estimating fishing power and mortality adjustments and Table 39 through Table 96 show the adjustment factors by horse power and length group as well as by gear.

###### 5.4.3.2.2.2 Economic Impacts of DAS carry-over provisions, status of stack permits and restrictions on vessel upgrades

Alternative 3.3.2.3.1 (No Action) would restrict DAS carry-over to 10 days per vessel and as a result, would reduce the DAS carry-over from 20 days to 10 days for a multi-boat owner that stacked two permits on one. This could negatively impact the vessels by reducing their ability to adjust to changing stock conditions, prices or costs. Alternative 3.3.2.3.2 would increase carryover to 20 days if a vessel has two permits stacked on it, which would be the continuation of status quo in terms of economic impacts.

Allowing de-stacking (Option 1, alternative 3.3.2.4) will provide more flexibility for vessels which would result in positive economic impacts. Option 2 would prohibit de-stacking, discouraging some owners from stacking permits and lowering the economic benefits.

Option A of alternative 3.3.2.5 would allow upgrading on stacked permits subject to the same 10/10/20 upgrading criteria applied currently. This option may lead to an increase in landings from the open areas because the fishing power adjustment did not take into account the characteristics of the upgraded vessel. If fishing mortality increases as a result of many vessels upgrading after permit stacking, the long-term impacts on scallop yield, revenues, and economic benefits will be negative. Option B would entirely prohibit upgrading, reduce flexibility for the vessels, limit the increase in the fleet efficiency and savings in costs and as a result have negative economic impacts. Option C would permit upgrading on vessels that stack as long as open area DAS are adjusted according to the fishing power adjustment selected for permit stacking. This alternative would prevent an increase in fishing mortality due to stacking and allow vessels to upgrade their vessels to reduce their costs, thus having positive economic impacts.

#### 5.4.3.2.3 Economic Impacts of Leasing

The leasing alternatives in this action would allow a vessel to lease part or all of its open area DAS allocation on an annual basis and lease any number of its access area trips. Consistent with the permit stacking restrictions, the lessee may lease open area DAS and access area trips up to twice the amount of allocation (Alternative 3.3.3.3). The results of economic analysis of the permit stacking alternatives are also relevant for the leasing alternatives with some caveats. The overall economic impacts of open area DAS and access area trip leasing will depend on how many vessels will resort to *leasing* rather than permit stacking, and on the extent of leasing, i.e., number of days or access area trips leased as well as on the cost of leasing. Leasing of open area DAS or access area trips would take place in so far as it increases profits for the trading vessels after the costs of leasing are taken into account. As in the case of permit stacking, the fishing power and mortality adjustments are expected to prevent a vessel from increasing scallop landings by leasing DAS from another vessel. Leasing could lead to an increase in profits of both lessor and the lessee only if the open area days or access area trips could be fished at lower costs on some vessels relative to others. Leasing would also reduce the fixed costs of the lessee, including the expenses for maintenance, repairs, liability insurance and other operating costs. The savings in fixed costs will not be as large, however, as in the case of permit stacking since the vessel that is not fishing will still be maintained and incur some insurance costs. More discussion of the economic impacts is provided in Section 5.4.3.8.

##### 5.4.3.2.3.1 Leasing of open area DAS

The same fishing power alternatives discussed in Section 5.4.3.2.2.1 for permit stacking will apply to the leasing of open area DAS with similar economic impacts.

#### 5.4.3.2.3.2 DAS and landings history

Leased DAS will be accounted for (subtracted from available DAS) prior to allocated DAS. These alternatives will have indirect positive economic impacts by keeping track of the amount of leased DAS to prevent an increase in overall DAS and fishing mortality.

#### 5.4.3.2.3.3 Leasing of access area trips

This alternative (3.3.3.2) would allow a vessel to lease one or more access area trips on an annual basis. This alternative would not need a fishing power adjustment clause because access area trips are managed with a possession limit. Compared to leasing of a full permit, this option is more flexible because it allows smaller units of access to be leased compared to a full permit. Some individuals may only want to lease some access in order to make a full year, i.e. 2 access area trips compared to access for an entire limited access permit (DAS and access area trips). The economic impacts of this alternative will be positive for the same reasons summarized in Section 5.4.3.2.3 and discussed in Section 5.4.3.8. This option will allow many individual vessel owners the flexibility to increase their profits because leasing some access is less expensive than having to lease an entire scallop permit. The vessel owners that lease their DAS to others will be paid a compensation for the pounds they are renting but not incur any trip costs or payments for the crew for landing these pounds. In addition, they may be able to reduce some of their fixed costs, such as the maintenance and repair costs for the vessel and/or use the time to participate in other fisheries. Leasing access area trips from other vessels will be profitable if the revenue they will obtain from the access area trip exceeds the cost of leasing, the fishing costs and payments for the crew, and if that is not the case, no leasing will occur.

#### 5.4.3.2.3.4 Other leasing provisions

Ownership cap provisions (3.3.3.4) will keep the overall cap at either the %5 of the permits or 5% of the DAS and access area allocations in order to prevent excessive consolidation in the fishery. Restricting leasing to the same permit category (Alternative 3.3.3.5, Option 1) will reduce flexibility for the vessels to adjust their allocations to economically optimal levels. Option 2 will allow leasing between different permit categories for access area trips only, but there will be no leasing of open area DAS between different permit categories. Although Option 2 is less restrictive than Option 1, it will still limit the lease of open area DAS with lower economic benefits than an option which didn’t and instead adjusted the transferred DAS for fishing power and overall mortality increase. Application requirements (3.3.3.6) will have indirect economic benefits by ensuring that leasing transactions conform to the provisions and restrictions included in the sections above. Allowing leasing (option1) from vessels in confirmation of permit history (CPH, Alternative 3.3.3.7) would increase the supply open area and access area DAS, lower the lease price and increase the overall landings and revenues from scallops. However, the increase in fishing mortality due to the activation of these permits could lead to lower yield and allocations in the future years adversely affecting the vessels that are not engaged in leasing. Given that the number of CPH permits are quite limited these impacts could be negligible, however. Option 2 would prohibit such transfers, thus would maintain the status quo. Allowing subleasing (3.3.3.8) would provide more flexibility to vessels to optimally adjust their activity to the changes in resource and market conditions with beneficial economic impacts. Other provisions (3.3.3.9) for leasing could have positive economic impacts if they lead to better monitoring of the leasing activity and fishing with leased DAS or trips. Some provisions, such as restricting leasing to once a year, could lower economic benefits compared to an option which provides flexibility to vessels to lease or sublease several times a year.

### 5.4.3.3 Development of the fishing power and overall mortality adjustments

Although permit stacking and leasing alternatives will provide flexibility for the vessels to adjust their effort to changes in the scallop biomass and/or in management measures, they could lead to an increase in fishing effort if DAS is transferred from a small vessel to a larger vessel with higher fishing power. The historical data on LPUE's for the full-time limited access fleet by vessel by horsepower, length and gross tonnage indicate that average open area trip landings and LPUE is higher and the trip length is longer for the group of vessels with a higher horsepower, length and gross tonnage compared to the smaller vessels (Table 90). Thus, if a transfer of DAS took place from small full-time scallop boats to the larger boats either through permit stacking or DAS leasing, the scallop landings, mortality, and the capacity in the fishery could in fact increase. As a result, the DAS allocations may have to be reduced during the next management cycle to prevent fishing mortality exceeding target levels. This could have adverse economic impacts on vessels that are not involved with DAS transfers if no adjustments are made to DAS.

**Table 90. Average annual LPUE of the FT vessels including small dredge and trawls**

| AREAGRP | FISHING_YEAR | 200-599 | 600-850 | 851-999 | >=1000 | Grand Total |
|---|---|---|---|---|---|---|
| ACCESS AREAS | 1999 | 1,040 | 1,419 | 1,518 | 1,564 | 1,416 |
| | 2000 | 1,501 | 1,709 | 1,737 | 1,874 | 1,721 |
| | 2001 | 1,665 | 1,886 | 1,871 | 1,886 | 1,827 |
| | 2002 | 1,475 | 1,880 | 1,694 | 1,901 | 1,764 |
| | 2003 | 1,601 | 1,960 | 1,898 | 1,977 | 1,858 |
| | 2004 | 1,706 | 2,070 | 2,130 | 2,355 | 2,036 |
| | 2005 | 1,621 | 1,787 | 1,704 | 2,026 | 1,781 |
| | 2006 | 2,233 | 2,509 | 2,785 | 2,903 | 2,522 |
| | 2007 | 2,028 | 2,412 | 2,672 | 2,600 | 2,362 |
| OPEN AREAS | 1999 | 858 | 928 | 924 | 1,123 | 962 |
| | 2000 | 1,200 | 1,419 | 1,385 | 1,581 | 1,402 |
| | 2001 | 1,418 | 1,750 | 1,724 | 1,877 | 1,679 |
| | 2002 | 1,540 | 1,838 | 1,832 | 1,985 | 1,774 |
| | 2003 | 1,561 | 1,903 | 1,934 | 2,009 | 1,823 |
| | 2004 | 1,852 | 2,359 | 2,376 | 2,521 | 2,237 |
| | 2005 | 1,692 | 2,279 | 2,387 | 2,654 | 2,169 |
| | 2006 | 1,282 | 1,681 | 2,015 | 2,139 | 1,698 |
| | 2007 | 1,090 | 1,475 | 1,565 | 1,663 | 1,423 |

**Table 91. Number of FT vessels including small dredge and trawls**

| AREAGRP | FISHING_YEAR | 200-599 | 600-850 | 851-999 | >=1000 | Grand Total |
|---|---|---|---|---|---|---|
| ACCESS | 1999 | 20 | 71 | 15 | 39 | 145 |
| | 2000 | 19 | 56 | 9 | 31 | 115 |
| | 2001 | 40 | 67 | 11 | 35 | 153 |
| | 2002 | 24 | 39 | 4 | 20 | 87 |
| | 2003 | 27 | 40 | 3 | 23 | 93 |
| | 2004 | 78 | 107 | 18 | 64 | 267 |
| | 2005 | 74 | 103 | 18 | 52 | 247 |
| | 2006 | 64 | 91 | 17 | 40 | 212 |
| | 2007 | 78 | 110 | 22 | 58 | 268 |
| OPEN | 1999 | 45 | 77 | 17 | 50 | 189 |
| | 2000 | 51 | 86 | 18 | 51 | 206 |
| | 2001 | 66 | 93 | 20 | 49 | 228 |
| | 2002 | 78 | 95 | 20 | 52 | 245 |
| | 2003 | 83 | 102 | 19 | 61 | 265 |
| | 2004 | 84 | 108 | 17 | 59 | 268 |
| | 2005 | 85 | 110 | 21 | 49 | 265 |
| | 2006 | 77 | 109 | 22 | 61 | 269 |
| | 2007 | 68 | 116 | 23 | 56 | 263 |

In order to address the concern that stacking could move effort from less powerful or lower-performing vessels to more powerful or higher-performing vessels, potentially increasing capacity and fishing mortality, the Council is considering alternatives for adjusting stacked permits or leased DAS for fishing power (Alternative 3.3.2.2.1) and also by a second mortality adjustment that would be applied to all transactions within a range of 5% to 11%. Another alternative (3.3.2.2.2) would allow vessels to stack permits with no power adjustment if the baseline specifications of the permits involved meet the current vessel replacement criteria of 20/10/10/10 (HP/GT/NT/LOA) and a hybrid alternative (Alternative 3.3.2.2.3) would require no adjustment if vessels are from the same upgrade restriction category, but would also allow vessels from different categories as long as the same power adjustment described in Section 5.4.3.3.2 is applied to stacked permit. If a trawl permit converts to a dredge vessel (through annual declaration) and stacks with another dredge permit it would not be permitted to convert back to a trawl permit and fish both permits with trawl gear (Alternative 3.3.2.2.4). These adjustments will only be for DAS only and would not adjust access area trips since that activity is controlled by output controls (possession limit). So if a full-time permit was stacked with an occasional permit, that vessel would be permitted to take multiple access area trips, but would be bound to the possession limit associated with each trip. Alternative 3.3.2.3 would restrict a vessel so that stacking a second permit could only occur once. A vessel could not stack two permits one year and then stack a third permit in the future. The Committee included two options for de-stacking: Option 1 would allow de-stacking and Option B would prohibit de-stacking. In addition, individual permits will count toward the 5% ownership restriction. One vessel with two permits would count as two permits in terms of the ownership maximum.

Section 5.4.3.3.1 presents a production model that is developed to derive a formula for adjusting DAS for fishing power adjustment (FPA) that is specific to the vessels involved in the stack/lease. The model estimates landings per vessel as a function of DAS used (annual), horsepower, length, LPUE and two dummy variables for dredge size. Information gathered from the advisory panel indicated that it was easy to change the GRT of the vessels, so the production model was revised to include length instead. In addition, different dummy variables for dredge and trawl were added to capture differences in efficiency from these gear types. Fishing power adjustments are developed in Section 5.4.3.3.2 based on coefficients of the production function. The adjustment factors are shown in Table 39 (Section 5.4.3.3.2) for vessels grouped by horsepower and length. An analysis of the impact of vessel's age on LPUE is provided in Section 5.4.3.3.3.2.

In addition to the adjustment described above that would account for differences in fishing power based on various horsepower and length characteristics, the Council is considering an additional "mortality" adjustment. Based on the production model estimates, on the impact of vessel's age on efficiency, and on factors that *are not taken into account* in the model but are expected to increase LPUE when effort is stacked/leased, the Scallop PDT recommended that an additional overall adjustment of 9% (Overall DAS or Mortality Adjustment) should be applied to the number of *days that are transferred*. This adjustment would be applied to all transactions regardless of HP and length class and would only apply to the permit or DAS that are transferred. The initial permit (and the DAS associated with the first permit) would not be affected by this adjustment. The rationale for this Mortality Adjustment is discussed in Section 5.4.3.3.3 and summarized below as follows:

- The simulation results based on the production model coefficients indicated that the LPUE (landings per days-absent) is estimated to increase by about 5% if open area days-at-sea used is doubled as result of stacking or leasing. Therefore, in order to keep the total catch constant, transferred open area days should be reduced by about 9% for the vessel that stacked permits or leased DAS.

- Although 9% mortality adjustment is derived from the production model coefficient, there are several reasons why an overall mortality adjustment would be needed ***even if*** the production model estimates resulted in a ***<u>constant</u>*** instead of a 5% increase in LPUE as open area DAS doubled.[5] In fact, LPUE could increase even more than 5% under some circumstances and due to factors that could not be taken into account by the production model.[6] In other words, scallop fishing mortality could increase even after the transferred days-at-sea are reduced by 9% for the reasons summarized below:
    a) Increase in vessel's flexibility in determining the trip length could lead to savings in steam time and increase landings per days-at-sea (including the steam time).
    b) Increase in vessel flexibility to end a trip if catch rates are not satisfactory could lead to overall increase in LPUE and catch when open area days-at-sea allocations are combined on a single boat.
    c) Newer vessels are estimated to have a higher LPUE compared to older boats ranging from 2% to 7% depending on how new the vessel is. Thus a smaller but newer vessel could have a higher LPUE compared a larger boat with

[5] This would happen if the coefficient of DAS variable is unitary instead of 1.07 in Table 92 below.
[6] Some Scallop Advisors also suggested LPUE could increase by much more than 5% predicted from the model because of the reasons discussed below.

higher horsepower. There is no adjustment, however, for the vessel age when DAS is transferred from an older boat to a newer vessel.

d) The production model explains 92% of variation in landings, so it is clear that there are other factors that influence LPUE that cannot be included in the production model – e.g. the skill of the captain and the crew, reduction gear ratio, size and shape of kort nozzle, and other characteristics of the vessel's platform.

While some factors such as described in (a) to (b) are probably reflected in the production model to some extent, other factors described in (c) and (d), such as the impacts of the vessel age, skill of the captain and the crew on LPUE are not included in the 9% adjustment. The PDT discussed if the adjustment should be higher than 9% to account for these factors, but instead decided that there are also issues that could constrain a vessel with more DAS that would potentially reduce LPUE. For example, if an access area is closed because of YT TAC, or measures for turtles restrict fishing during certain seasons, the owners who stacked permits on single boats may have less flexibility relative to the ones that didn't, thus could send two of their boats to fish at the same time before the areas closed (Please see Section 5.4.3.3.3 for more discussion). **Ultimately, the PDT was most comfortable with a range of 7-11%** for this mortality adjustment because that is based on the best available science including the variance from the model output (standard deviation of 2% in either direction). It was also discussed that this adjustment could be re-evaluated after Amendment 15 to determine if 9% was the appropriate value to use and if not could be adjusted by framework.

#### 5.4.3.3.1 Production Model

The production model was estimated in order to determine how vessel characteristics impact landings per DAS (after taking into account the changes in biomass) for the purpose of adjusting DAS with the measurable characteristics of vessels (such as HP and length) to prevent an increase in the fishing mortality. It separates the impacts of the HP, length, DAS, gear and biomass in determining LPUE in order to derive a matrix of adjustment factors for DAS transfers. Furthermore, production model is an integral part of the simulation model that is used to determine the impacts of the consolidation on vessel costs, profits and employment based on several scenarios with DAS scenarios.

The production model was **not** intended to measure the technical efficiency or a production frontier of the most efficient combination of inputs. The fishing efficiency other than the one that arises from vessel characteristics such as horsepower and length, or effort (DAS) was not a factor considered for adjusting the open area DAS transfers. In other words, there will be no fishing power adjustment for DAS if one vessel is more efficient than another vessel that had exactly the same characteristics in terms of HP or length. Other factors that results in increased efficiency, such as vessel's age, skill of the crew and captain, and various other characteristics of the vessels that cannot be measured easily were taken into account, however, by an "overall mortality adjustment" as discussed in Section 5.4.3.3.3 below. In other words, DAS transfers will be subject to a fishing power adjustment based on vessel characteristics and also to an additional mortality adjustment independent of the vessel horse power or length.

The annual open area production model was estimated using different functional forms and variables including horsepower, gross tonnage, length, crew size, DAS-used, dredge size, time trend, a proxy for open area biomass, vessel size and variables separating the impacts of small dredge and scallop trawl vessels. The goal was to derive a relatively simple functional form with variables that could be measured reliably and couldn't be changed easily. For example, as some scallop industry members indicated, gross tonnage of a vessel could be altered relatively easily compared to changing the length of the vessel. Similarly, it would be relatively easy to change number of crew (up to the crew limit) and dredge size. In fact, the regression analyses for the period 2000-2007 showed that the impacts of crew and the dredge size multiplied by the number of dredges were statistically insignificant. Instead dummy variables for small dredge and scallop trawls captured the impacts of the dredge size and using trawls for scallop fishing better.

Consistent with these concerns, a step-wise regression analysis identified DAS-used, proxy for biomass, horsepower, length and small dredge and scallop trawl dummy variables as significant at the 0.15 level. This model was estimated using nonlinear Generalized Methods of Moments (GMM) which provides t-values corrected for heteroscedasticity. The statistical results indicate that these variables accounted for more than 92% of the variance in open area scallop landings per vessel and support a Cobb-Douglas production model. Overall, the model provides a very good fit to the actual scallop landings as Table 92 shows.

**Table 92. Cobb-Douglas Production function with length**

model - 12 GMM with HCCME=1

The MODEL Procedure

Nonlinear GMM Summary of Residual Errors

| Equation | DF Model | DF Error | SSE | MSE | Root MSE | R-Square | Adj R-Sq | Durbin Watson |
|---|---|---|---|---|---|---|---|---|
| lnscdealb | 7 | 1957 | 91.4130 | 0.0467 | 0.2161 | 0.9253 | 0.9251 | 1.4361 |

Nonlinear GMM Parameter Estimates

| Parameter | Estimate | Approx Std Err | t Value | Approx Pr > \|t\| |
|---|---|---|---|---|
| intc | -2.78036 | 0.3156 | -8.81 | <.0001 |
| daco | 1.070604 | 0.0101 | 106.49 | <.0001 |
| hpco | 0.211258 | 0.0253 | 8.36 | <.0001 |
| lenco | 0.096521 | 0.0626 | 1.54 | 0.1235 |
| dftco | -0.45447 | 0.0261 | -17.40 | <.0001 |
| lpueco | 1.081665 | 0.0293 | 36.86 | <.0001 |
| trwco | -0.1018 | 0.0332 | -3.06 | 0.0022 |

| Number of Observations | | Statistics for System | |
|---|---|---|---|
| Used | 1964 | Objective | 1.554E-21 |
| Missing | 50 | Objective*N | 3.051E-18 |

| Parameter | 95% confidence interval | |
|---|---|---|
| intc | -3.399 | -2.162 |
| daco | 1.051 | 1.090 |
| hpco | 0.162 | 0.261 |
| lenco | -0.026 | 0.219 |
| dftco | -0.506 | -0.403 |
| lpueco | 1.024 | 1.139 |
| trwco | -0.167 | -0.037 |

**<u>Variable Definitions and data sources</u>**

LNSCDEALB= Logarithm of annual scallop landings per fishing year in pounds (source: dealer data)
INTC= Intercept
DACO= The coefficient for DAS-used (source: DAS data)
HPCO= The coefficient for Horse-power (source: Permit data)
LENCO= The coefficient for vessel length (source: Permit data)
DFTCO= Dummy variable for small dredge (equal to "1" if the vessel is small dredge, "0" if it is not).
LPUECO= The coefficient for average LPUE of the vessels that fished every year since 1994 (14 years). This variable is used as a proxy for open area average scallop abundance.
TRWCO= Dummy variable for scallop trawls (equal to "1" if the vessel is small dredge, "0" if it is not).

The production function is estimated using a subset of the DAS database, which was matched to the trip records in the dealer database and excluded a few outlier records. About half of the DAS records had a corresponding record in dealer database, which could be easily matched and constitute a good sample for the purpose of analyses presented here. For example, DAS data includes 317 full-time vessels that took open area trips in the 2006 fishing year, but there were matching records for 269 of these vessels in the dealer dataset. During estimation the observations with high influence statistics including H, RSTUDENT, DFFITS, and Cook's D are also excluded from the sample. All of coefficients of the explanatory variables have the expected sign, and they are statistically significant.

Because the coefficient for DAS is greater than unity, this function exhibits increasing average and marginal returns to DAS variable for the period covered in this estimation, i.e., from fishing year 2000 to 2007. In other words, landings per DAS increase (but at a diminishing rate) as DAS used increase for the range of open area DAS allocations observed during this period. An implication of this increase in LPUE is that if no adjustment is made for this increase, total scallop landings could go up as a result of DAS leasing or permit stacking even if adjustment is made for the fishing power of the vessels based on HP and GRT. The simulation results based on the production model coefficients indicated that the LPUE (landings per days-absent) is estimated to increase by about 5% if open area days-at-sea used is doubled as result of stacking or leasing. The 95% confidence interval indicated that LPUE could increase by 3% to 7% as a result of stacking.

In addition to the Cobb-Douglas model, the PDT also estimated a translog function which includes a domed relationship between DAS and LPUE, that is, a function where LPUE first increases as the DAS-used increase, reaches a maximum and then starts declining at higher effort (DAS-used) levels. However, this model was not used for purposes of calculating the fishing power and mortality adjustment because a translog model based on the period 2000 – 2007 with limited open area allocations (less than 60 days for most of the period) may not be able to capture the actual point of diminishing return. In fact, the concern that this model artificially resulted in diminishing returns at 76 days due to insufficient data points above these DAS levels that led the PDT to adopt the Cobb-Douglas Model during the previous meeting. The estimates of the translog model for different time periods, in fact, resulted in point of diminishing returns at different DAS levels. The estimates for the period 1994-2007 using horsepower and vessel length resulted in diminishing returns at 160 days. The production model estimated in 1995 using the data for 1987 to 1993 resulted in average diminishing returns to be reached at 187 days. Thus, there is no question that the estimates are affected by the period and by the levels of DAS allocations that were observed in each period. In addition, there wouldn't be a significant change in fishing power and mortality adjustment estimates with either the Translog or the Cobb-Douglas model in so far as open area DAS allocations remained close to the levels observed during the period 2000-2007.

#### 5.4.3.3.2 Fishing Power Adjustment Factors

Adjustment factors based on the estimates of the Cobb-Douglas production model are shown in Table 39 for 8-HP and two-length groups using the full-time scallop fleet characteristics. The adjustment factors in relative LPUE are expressed as follows:

$A_{ij}$= LPUE $_i$/LPUE$_j$ where

LPUE $_i$= Landings per DAS for vessel 'I';

LPUE $_j$= Landings per DAS for vessel 'J';

The adjustment factor ($A_{ij}$) for DAS exchanges between two vessels (vessel "i" and vessel "j") are calculated using the production function estimates of relative LPUE's.

The full-time time dredge vessels are grouped into 13 groups by their HP and length (Table 39). This grouping allows many vessels with similar characteristics and adjustment factors to be placed in the same group. In terms of HP, 8 groups are constructed starting with 500 HP and with including vessels up to 20% higher HP in the same group using the vessel replacement criteria for HP. The length grouping identifies small vessels with 50 to 70 feet and large vessels with more than 70 feet.

Table 39 shows the adjustment factors for this group of vessels for fishing power, i.e., for HP and length. Although, larger length groups could be subdivided into more subgroups, the examination of Table 39 shows that the incremental difference in the adjustment factors for HP and length is already quite small between these 13 groups, and having more groups would possibly have a marginal influence on the adjustment values. The same adjustment factors are relevant for DAS transfers full-time, part-time and occasional dredge vessels, between small scallop dredges or between scallop trawls. If DAS transfers take place between a regular and a small dredge or between a dredge and a trawl, however, the adjustment coefficients would be lower as shown in Table 95 (Trawl to Dredge) and Table 96 (Small Dredge to Dredge) below. This is because trawls and small dredges have a lower LPUE compared to regular scallop dredge vessels as the production function estimates indicated (Coefficients DFCO, TRWCO in Table 92).

**Table 93. Full-time Dredge Vessel Characteristics**

| HP | Length | HP-Length Group | Number of vessels | HP | GRT | Length |
|---|---|---|---|---|---|---|
| <500 | 50-70 | 11 | 5 | 392 | 59 | 61 |
| <500 | >70 | 12 | 9 | 431 | 122 | 77 |
| 500-599 | 50-70 | 21 | 5 | 523 | 79 | 64 |
| 500-599 | >70 | 22 | 25 | 530 | 132 | 77 |
| 600-719 | 50-70 | 31 | 4 | 618 | 99 | 66 |
| 600-719 | >70 | 32 | 37 | 641 | 146 | 81 |
| 720-863 | 50-70 | 41 | 4 | 763 | 119 | 65 |
| 720-863 | >70 | 42 | 74 | 814 | 166 | 83 |
| 864-1036 | 50-70 | 51 | 1 | 950 | 111 | 64 |
| 864-1036 | >70 | 52 | 30 | 959 | 167 | 86 |
| 1037-1243 | >70 | 62 | 38 | 1,121 | 183 | 89 |
| 1244-1492 | >70 | 72 | 12 | 1,299 | 178 | 90 |
| >=1493 | >70 | 82 | 11 | 1,545 | 186 | 99 |

**Table 94. Adjustment factors for fishing year 2007 (Based on group means for HP and length for 255 full-time dredge vessels)**

| HP | Length | HP-Len Group | Full-time Dredges: HP-Length Group DAS leased/stacked from | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 11 | 12 | 21 | 22 | 31 | 32 | 41 | 42 | 51 | 52 | 62 | 72 |
| <500 | 50-70 | 11 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| <500 | >70 | 12 | 0.958 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 500-599 | 50-70 | 21 | 0.936 | 0.977 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 500-599 | >70 | 22 | 0.917 | 0.957 | 0.980 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 600-719 | 50-70 | 31 | 0.903 | 0.942 | 0.965 | 0.985 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 600-719 | >70 | 32 | 0.876 | 0.914 | 0.936 | 0.955 | 0.970 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 720-863 | 50-70 | 41 | 0.862 | 0.900 | 0.921 | 0.940 | 0.955 | 0.984 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 720-863 | >70 | 42 | 0.831 | 0.867 | 0.888 | 0.906 | 0.920 | 0.948 | 0.964 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 864-1036 | 50-70 | 51 | 0.825 | 0.861 | 0.882 | 0.900 | 0.914 | 0.942 | 0.957 | 0.993 | 1.000 | 1.000 | 1.000 | 1.000 |
| 864-1036 | >70 | 52 | 0.800 | 0.835 | 0.855 | 0.873 | 0.886 | 0.914 | 0.928 | 0.963 | 0.970 | 1.000 | 1.000 | 1.000 |
| 1037-1243 | >70 | 62 | 0.771 | 0.805 | 0.824 | 0.841 | 0.854 | 0.881 | 0.895 | 0.928 | 0.935 | 0.964 | 1.000 | 1.000 |
| 1244-1492 | >70 | 72 | 0.747 | 0.780 | 0.798 | 0.815 | 0.827 | 0.853 | 0.866 | 0.899 | 0.905 | 0.933 | 0.969 | 1.000 |
| >= 1493 | >70 | 82 | 0.714 | 0.745 | 0.763 | 0.779 | 0.791 | 0.815 | 0.828 | 0.859 | 0.865 | 0.892 | 0.926 | 0.956 |

**Table 95. Adjustment factors for DAS transfers from full-time trawls to full-time dredges fishing year 2007 (Based on group means for HP and length for 255 full-time dredge vessels)**

| HP | Length | Acquiring HP-Length Group | Full-time Trawl: HP-Length Group DAS leased/stacked from | | |
|---|---|---|---|---|---|
| | | | 12 | 22 | 32 |
| <500 | 50-70 | 11 | 0.955 | 0.989 | 1 |
| <500 | >70 | 12 | 0.915 | 0.947 | 0.983 |
| 500-599 | 50-70 | 21 | 0.894 | 0.925 | 0.960 |
| 500-599 | >70 | 22 | 0.876 | 0.907 | 0.941 |
| 600-719 | 50-70 | 31 | 0.862 | 0.893 | 0.926 |
| 600-719 | >70 | 32 | 0.837 | 0.866 | 0.899 |
| 720-863 | 50-70 | 41 | 0.824 | 0.853 | 0.885 |
| 720-863 | >70 | 42 | 0.794 | 0.822 | 0.852 |
| 864-1036 | 50-70 | 51 | 0.788 | 0.816 | 0.846 |
| 864-1036 | >70 | 52 | 0.764 | 0.791 | 0.821 |
| 1037-1243 | >70 | 62 | 0.737 | 0.763 | 0.791 |
| 1244-1492 | >70 | 72 | 0.714 | 0.739 | 0.766 |
| >=1493 | >70 | 82 | 0.682 | 0.706 | 0.733 |

**Table 96. Adjustment factors for DAS transfers from full-time small dredges to full-time dredges fishing year 2007 (Based on group means for HP and length for 255 full-time dredge vessels)**

| HP | Length | Acquiring HP-Length Group | Full-time Small Dredge: HP-Length Group DAS leased/stacked from | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 11 | 12 | 21 | 22 | 32 | 42 | 72 |
| <500 | 50-70 | 11 | 0.627 | 0.650 | 0.671 | 0.690 | 0.716 | 0.76 | 0.850 |
| <500 | >70 | 12 | 0.601 | 0.623 | 0.643 | 0.661 | 0.686 | 0.73 | 0.815 |
| 500-599 | 50-70 | 21 | 0.587 | 0.608 | 0.628 | 0.646 | 0.670 | 0.71 | 0.796 |
| 500-599 | >70 | 22 | 0.575 | 0.596 | 0.615 | 0.632 | 0.657 | 0.70 | 0.780 |
| 600-719 | 50-70 | 31 | 0.566 | 0.587 | 0.606 | 0.623 | 0.647 | 0.68 | 0.768 |
| 600-719 | >70 | 32 | 0.549 | 0.569 | 0.588 | 0.604 | 0.627 | 0.66 | 0.745 |
| 720-863 | 50-70 | 41 | 0.541 | 0.560 | 0.578 | 0.595 | 0.618 | 0.65 | 0.733 |
| 720-863 | >70 | 42 | 0.521 | 0.540 | 0.557 | 0.573 | 0.595 | 0.63 | 0.707 |
| 864-1036 | 50-70 | 51 | 0.517 | 0.536 | 0.553 | 0.569 | 0.591 | 0.63 | 0.702 |
| 864-1036 | >70 | 52 | 0.502 | 0.520 | 0.537 | 0.552 | 0.573 | 0.61 | 0.681 |
| 1037-1243 | >70 | 62 | 0.484 | 0.501 | 0.517 | 0.532 | 0.552 | 0.58 | 0.656 |
| 1244-1492 | >70 | 72 | 0.468 | 0.486 | 0.501 | 0.515 | 0.535 | 0.57 | 0.635 |
| >=1493 | >70 | 82 | 0.448 | 0.464 | 0.479 | 0.493 | 0.511 | 0.54 | 0.607 |

### 5.4.3.3.3 Overall Mortality adjustment

The Council is considering an additional "mortality" adjustment to be applied to all stack/DAS lease transactions to recognize that LPUE increases when DAS increase, and there are other factors that influence LPUE that cannot be included in the production model – e.g. the skill of the captain and the crew, the age of the vessel, reduction gear ratio, size and shape of kort nozzle, etc. As a result, the LPUE and the fishing mortality could increase even if the transferred DAS is adjusted for the fishing power. If this is not accounted for, the allocations have to be adjusted in the next management action to lower the fishing mortality rate to the sustainable levels. Such adjustment could lead to adverse impacts on boats that are not involved in DAS leasing and permit stacking (Table 25 and Table 34). In addition, if the increase in scallop fishing mortality results in higher management uncertainty, the ACT's could be adjusted downwards negatively impacting all the vessels in the fishery. An overall mortality adjustment could prevent or reduce these potentially negative economic impacts on the vessels in the scallop fishery. This adjustment would be applied to all transactions regardless of HP and length class and would only apply to the permit or DAS that are transferred. The initial permit (and the DAS associated with the first permit) would not be affected by this adjustment.

The simulation results based on the production model coefficients indicated that the LPUE (landings per days-absent) is estimated to increase by about 5% if open area days-at-sea used is doubled as result of stacking or leasing. For example, consider a vessel that had an open area LPUE of 2000 pound per days absent while fishing with 42 open area days-at-sea. The model results suggested that if this vessel doubles it open area days from 42 to 84 days through leasing/stacking, its LPUE could increase to 2100 per day-at-sea, increasing the total catch by 5%. Therefore, in order to keep the total catch constant, total days should be reduced by 5% from 84 days to approximately 80 days. To be consistent with the fishing power adjustment which is applied only to the transferred days, the same result could be obtained by reducing the transferred days, that is, 42 days-at-sea by about double of 5%. The reason why the adjustment is less than 10% (5%*2) has to do with the decline in LPUE as the number of transferred days is reduced (as a result of the adjustment). Taking this into account, the simulation model indicated that the transferred days-at-sea, i.e., 42 days, should be reduced approximately by about 9%, by about 4 days, to 38 days, in order to keep the fishing mortality constant.

Although 9% mortality adjustment is derived from the production model coefficient, there are several reasons why an overall mortality adjustment would be needed ***even if*** the production model estimates resulted in a ***constant*** instead of a 5% increase in LPUE as open area DAS doubled. [7] In fact, LPUE could increase even more than 5% under some circumstances and due to factors that could not be taken into account by the production model.[8] In other words, scallop fishing mortality could increase even after the transferred days-at-sea are reduced by 9% for the reasons summarized below:

a) Increase in vessel's flexibility in determining the trip length could lead to savings in steam time and increase landings per days-at-sea (including the steam time). Several examples provided in Section 5.4.3.3.3.1, in Table 97 to Table 99, show how this flexibility could help to increase LPUE and landings by 3% to 14% assuming a given level of DAS allocation, steam time and LPUE from different areas. If for example, LPUE could be increased by more than 10% by adjusting the trip lengths more optimally as a result of stacking, keeping the fishing mortality constant may require a mortality adjustment close to a 20% instead of the 9% suggested by the PDT.
b) Increase in vessel flexibility could help to increase LPUE not only when the trip length is increased resulting in fewer trips, but also by reducing the trip length when LPUE is higher for shorter trips but vessels has to take longer than optimal trips due to the constraints imposed by lower DAS allocations. An example of an increase in

[7] This would happen if the coefficient of DAS variable is unitary instead of 1.07 in Table 92 below.
[8] Some Scallop Advisors also suggested LPUE could increase by much more than 5% predicted from the model because of the reasons discussed below.

LPUE from lowering the trip length (and increasing the number of trips) is provided in Table 100.

c) Increase in vessel flexibility to end a trip if catch rates are not satisfactory could lead to overall increase in LPUE and catch when open area days-at-sea allocations are combined on a single boat. An example of this situation shown in Table 101 indicates that LPUE could increase by 12% by doubling the open area DAS allocation.
d) Newer vessels are estimated to have a higher LPUE compared to older boats ranging from 2% to 7% depending on how new the vessel is (Section 5.4.3.3.3.2). Thus a smaller but a newer vessel could have a higher LPUE compared a larger boat with higher horsepower. There is no adjustment, however, for the vessel age when DAS is transferred from an older boat to a newer vessel.
e) The production model explains 92% of variation in landings, so it is clear that there are other factors that influence LPUE that cannot be included in the production model – e.g. the skill of the captain and the crew, reduction gear ratio, size and shape of kort nozzle, and other characteristics of the vessel's platform. For example, if the DAS is transferred to a boat with a more skillful crew, catch per DAS and landings could increase from that factor alone.
f) LPUE is could change because of changes in fishing patterns. For example, a multi-vessel owner that sends both of its vessels to the most productive areas at the same time will not be able to do that after stacking/leasing. If this reduces the number of vessels that fish in that area per-unit of time, the overall LPUE would also decline at a slower rate than before. On the other hand, a vessel owner could send two boats at the same time to fish in a very productive area, but with stacking it will not be able to do that. If this pushes the fishing date to seasons when the meat-weight is lower, than, LPUE could decline because of stacking. The overall result would depend whether the increase in LPUE because of the spreading out effort outweighs the negative impact on LPUE because the fishing takes place when meat-weigh is lower. If three fourths of the boats share the same crew as was indicated by many boat owners, this means the vessels owned by multi boat owners usually do not fish at the same time most of the year. If this is the case, there might not be significant impacts on LPUE from changing the fishing patterns. In other situations, if an access area is closed because of YT TAC, or measures for turtles restrict fishing during certain seasons, the owners who stacked permits on single boats may have less flexibility relative to the ones that didn't. For example, multi-boat owners could send two of their vessels to fish at the same time before the areas are closed before Yellowtail TAC is reached, whereas the owners who stacked permits on one boat will not be able to do that and avoid closure.

While some factors such as described in (a) to (c) are probably reflected in the production model to some extent, other factors described in (d) and (e), such as the impacts of the vessel age, skill of the captain and the crew on LPUE are not included in the 9% adjustment. The PDT discussed if the adjustment should be higher than 9% to account for these factors, but instead decided that there are also issues as discussed in (f) that could constrain a vessel with more DAS or vessels that stack two permits on one boat that would potentially reduce LPUE. **Ultimately, the PDT was most comfortable with a range of 7-11%** for this mortality adjustment because that is based on the best available science including the variance from the model output (standard deviation of 2% in either direction). It was also discussed that this adjustment could be re-evaluated after Amendment 15 to determine if 9% was the appropriate value to use and if not could be adjusted by framework.

#### 5.4.3.3.3.1 The impacts of flexibility on LPUE and catch

If vessels are permitted to fish more DAS on one vessel the model suggests that average catch per DAS will increase for that vessel primarily because it will have more flexibility in determining trip length.

The production function estimates indicated that LPUE increases (but at a diminishing rate) as DAS used increase for the range of open area DAS allocations observed during the period 2000-2007. This implies that if no adjustment is made for increasing returns to the DAS-used, total scallop landings could increase as a result of DAS leasing or permit stacking even if adjustment is made for the fishing power of the vessels based on HP and length.

In estimation of the production model, LPUE (or average returns to the DAS) is defined as landings per DAS-used (includes steam time), not landings per day-fished, which is an important distinction for a proper interpretation of the increasing returns. The increase in LPUE is applicable here only to situations where the same number of allocated DAS is fished on two separate boats are combined on one boat. Under these circumstances, fishermen would be subject to same process of selection of most efficient conditions when they were using their DAS allocations on two different boats, except that they would have more flexibility in determining the trip length.

Table 97 to Table 101 illustrates how LPUE (per DAS-used) could increase by combining allocations. For example, consider a multi-boat owner that operates two vessels fishing 30 days each in open areas, totaling 60 days. Assume that the upper limit for the optimal trip length is 12 and with 30 days, the vessel could take 3 trips. That means 6 trips for an owner who has two boats. But if this vessel can increase its allocation to 60 days, then it can take 5 trips at 12 days each, saving on steaming time and increasing its LPUE per DAS-used by 4% (Table 97).

The second example in Table 98 assumes different steaming times and LPUEs for each trip with 42 days-at-sea allocation, resulting in an increase in LPUE by 7% when the open area days are combined on one boat (84 days). The third example (Table 99) also assumes that longer trips, i.e., 12 days in this case, would result in higher LPUE and more steaming time perhaps because vessels fishes in a more productive area farther from the port when they take longer trips. Combining days-at-sea allocations would result in a 13% increase in LPUE in this case. The fourth scenario (Table 100) shows a case when LPUE declines as the trip length is increased. Again, a vessel would take 4 trips in this case with a 45 open area DAS allocation, totaling to 8 trips and 90 days for a multi-boat owner. By combining days-at-sea allocations on one boat, the vessel than could take 9 trips at the optimal trip length of 10 days each increasing the total LPUE by 3%. Finally, Table 101 shows a case when a trip becomes less productive due to a decline in LPUE, but the vessel continue to fish because interrupting the trip could result in higher costs due to the steaming time of taking another very short trip. Combining the days on the same vessel, the captain will have more choices when to break a trip and then combine remaining days with another trip, resulting in a 12% increase in LPUE. More examples could be constructed assuming different levels of days-at-sea allocations, different LPUEs and steaming times for each trip. But the main point here is to illustrate that stacking open area days-at-sea allocations on one boat could lead to increased flexibility in determining the optimal trip length, higher LPUE and catch from given days-at-sea allocations.

**Table 97. Increase in LPUE with combined DAS allocations assuming constant LPUE and steam time (30 days)**

| | Open area | | | | | | |
|---|---|---|---|---|---|---|---|
| DAS Allocation | 30 | Trips | Trip-1 | Trip-2 | Trip-3 | Total | 2 Boats |
| | DAS-used | 3 | 10 | 10 | 10 | 30 | 60 |
| | Steam time | | 2 | 2 | 2 | 6 | 12 |
| | DF | | 8 | 8 | 8 | 24 | 48 |
| | Landings per DF | | 1800 | 1800 | 1800 | 1800 | |
| | Landings (lb) | | 14400 | 14400 | 14400 | 43200 | 86400 pound |
| | LPUE (lb/DAS) | | 1440 | 1440 | 1440 | 1440 | |
| **After DAS transfer** | | | | | | | |
| DAS Allocation | 60 | Num.trips | Trip length | | | Total | |
| | DAS-used | 5 | 12 | | | 60 | |
| | Steam time | | 2 | | | 10 | |
| | DF | | 10 | | | 50 | |
| | Landings per DF | | 1800 | | | 1800 | |
| | Landings (lb) | | 18000 | | | 90000 | 90000 pound |
| | LPUE (lb/DAS) | | 1500 | | | 1500 | **Increase in LPUE= 4%** |

**Table 98. Increase in LPUE with combined DAS allocations assuming higher LPUE and steam time for longer trips (42 days)**

| **Before Transfer** | 42 | Trips | Trip-1 | Trip-2 | Trip-3 | Trip-4 | Total | 2 boats 84 days |
|---|---|---|---|---|---|---|---|---|
| | DAS-used | 4 | 12 | 12 | 12 | 6 | 42 | |
| | Steam time | | 3 | 3 | 3 | 2 | 11 | 22 |
| | DF | | 9 | 9 | 9 | 4 | 31 | 62 |
| | Landings per DF | | 2800 | 2800 | 2800 | 1800 | 2671 | |
| | Landings | | 25200 | 25200 | 25200 | 7200 | 82800 | 165,600 |
| | LPUE | | 2100 | 2100 | 2100 | 1200 | 1971 | |
| **After DAS transfer** | | | | | | | | |
| DAS Allocation | 84 | Num.trips | Trip-length | Num.trips | Trip-length | Total | | |
| | DAS-used | 7 | 12 | 0 | 0 | 84 | | |
| | Steam time | | 3 | 0 | 0 | 21 | | |
| | DF | | 9 | 0 | 0 | 63 | | |
| | Landings per DF | | 2800 | 0 | 0 | 2,800 | | |
| | Landings | | 25200 | 0 | 0 | 176400 | | 176,400 |
| | LPUE | | 2100 | 0 | 0 | 2100 | | 7% |

**Table 99. Increase in LPUE with combined DAS allocations assuming higher LPUE for longer trips (42 days)**

| Before Transfer | 42 | Trips | Trip-1 | Trip-2 | Trip-3 | Trip-4 | Total | 84 days |
|---|---|---|---|---|---|---|---|---|
| | DAS-used | 4 | 12 | 10 | 10 | 10 | 42 | |
| | Steam time | | 3 | 2 | 2 | 2 | 9 | 18 |
| | DF | | 9 | 8 | 8 | 8 | 33 | 66 |
| | Landings per DF | | 2800 | 2200 | 2200 | 2200 | 2364 | |
| | Landings | | 25200 | 17600 | 17600 | 17600 | 78000 | 156,000 |
| | LPUE | | 2100 | 1760 | 1760 | 1760 | 1857 | |
| **After DAS transfer** | | | | | | | | |
| DAS Allocation | 84 | Num.trips | Trip-length | Num.trips | Trip-length | Total | | |
| | DAS-used | 7 | 12 | 0 | 0 | 84 | | |
| | Steam time | | 3 | 0 | 0 | 21 | | |
| | DF | | 9 | 0 | 0 | 63 | | |
| | Landings per DF | | 2800 | 0 | 0 | 2,800 | | |
| | Landings | | 25200 | 0 | 0 | 176400 | | 176,400 |
| | LPUE | | 2100 | 0 | 0 | 2100 | | 13% |

**Table 100. Increase in LPUE with combined DAS allocations assuming higher LPUE for shorter trips (42 days)**

| Before Transfer | 45 | Trips | Trip-1 | Trip-2 | Trip-3 | Trip-4 | Total | 2 boats, 8 trips, 84 days |
|---|---|---|---|---|---|---|---|---|
| | DAS-used | 4 | 10 | 11 | 12 | 12 | 45 | |
| | Steam time | | 3 | 3 | 3 | 3 | 12 | 24 |
| | DF | | 7 | 8 | 9 | 9 | 33 | 66 |
| | Landings per DF | | 2800 | 2600 | 2500 | 2500 | 2588 | |
| | Landings | | 19600 | 20800 | 22500 | 22500 | 85400 | 170,800 |
| | LPUE | | 1960 | 1891 | 1875 | 1875 | 1898 | |
| **After DAS transfer** | | | | | | | | |
| DAS Allocation | 90 | Num.trips | Trip-length | | | Total | | |
| | DAS-used | 9 | 10 | | | 90 | | |
| | Steam time | | 3 | | | 27 | | |
| | DF | | 7 | | | 63 | | |
| | Landings per DF | | 2800 | | | 2,800 | | |
| | Landings | | 19600 | | | 176400 | | 176,400 |
| | LPUE | | 1960 | | | 1960 | | 3% |

**Table 101. Increase in LPUE with combined DAS allocations with different LPUE's per trip (42 days) Assumption: Trip 1 and Trip 2 – LPUE is 2500 first 4 days, declines to 1000**

| **Before Transfer** | 42 | Num.Trips | Trip-A | Trip-B | Trip-C | Total | 84 days |
|---|---|---|---|---|---|---|---|
| | Number of trips | | 1 | 1 | 2 | | |
| | DAS-used | | 8 | 10 | 12 | | |
| | Steam time | | 2 | 2 | 2 | | |
| | DF | | 6 | 8 | 10 | | |
| | Total DAS-used | | 8 | 10 | 24 | 42 | |
| | Landings per DF | | 2000 | 1750 | 2500 | | |
| | Landings | | 12000 | 14000 | 50000 | 76000 | 152,000 |
| | LPUE | | 1500 | 1400 | 2083 | 1810 | |

| **After DAS transfer** | 84 | Num.Trips | Trip-A | Trip-B | Total | % Change |
|---|---|---|---|---|---|---|
| | Number of trips | | 2 | 6 | 8 | |
| | DAS-used | | 6 | 12 | | |
| | Steam time | | 2 | 2 | 16 | |
| | DF | | 4 | 10 | 68 | |
| | Total DAS-used | | 12 | 72 | 84 | |
| | Landings per DF | | 2500 | 2500 | 5000 | |
| | total Landings | | 20000 | 150000 | 170000 | 12% |
| | LPUE | | 1667 | 2083 | 2024 | 12% |

There are also additional reasons why LPUE might increase as a result of permit stacking/DAS leasing that cannot fully be taken into account with the production model. As described on page 5 of this document, transferring DAS to the boat with a better and more efficient platform or to the boat with a better and more experienced crew could increase LPUE even if this vessel had the same HP or length as the original boat. In addition, DAS leasing/stacking could impact the fishing pattern and distribute effort more evenly during the fishing season, reducing the decline in overall LPUE per unit of time especially during the months with highest fishing activity. Overall impacts of spreading effort are uncertain, however, depending on the season the fishing takes place as explained above.

### 5.4.3.3.3.2 The impact of vessel's age on LPUE

The production model described above did not include vessel's age as an explanatory variable because this variable was not considered as a factor to be used in adjusting DAS after stacking/leasing. Several scallop industry members indicated, however, that the newer vessels are more efficient than the older boats, therefore stacking DAS from the old boats to the new ones could increase fishing mortality. In fact, empirical estimates indicate that the newer vessels have a higher LPUE than the older ones.

Table 102 shows the difference of the LPUE of the vessels by vessel's age and HP for 2006 fishing year. Even when newer vessels had a lower average HP, lend and GRT, their average LPUE exceeded the average LPUE of the older vessels. For example, LPUE of the newer boats with a HP of 1000 or more was 24% higher than the LPUE of the older boats. Although this

Table provides some insight about the impacts of the vessel's age on LPUE, the results should be interpreted with caution. This is because vessels with different HP, length and GRT are grouped together and there are only 22 relatively newer vessels in the sample compared to 176 vessels in the group 10 years and older. However, a version of the production model which included vessel size as another explanatory factor indicated that newer vessels could be more efficient than the older vessels. That model was not used since the scallop PDT and the committee decided that overall mortality adjustment would take into account the increase in LPUE when open area days are transferred from an older to a newer vessel. Making adjustments to the open area transfers based on the vessel age would reward the older vessels and penalize the new ones. In addition, including vessel size as another explanatory variable did not result in any significant changes in the matrix for fishing power adjustments or in the explanatory power of the model compared to the simpler form presented in Table 92 above.

**Table 102. Landings per DAS-used by the vessel's age and horsepower (2006 Fishing year, FT dredge vessels)**

| Fishing Year | Horse Power | Data | 1 to 10 years | 10 years and older | % Difference |
|---|---|---|---|---|---|
| 2006 | 200-599 | Number of vessels | 4 | 28 | |
| | | **LPUE** | **1347** | **1415** | **6%** |
| | | | 6.0 | 27.7 | |
| | | HP | 454 | 505 | -12% |
| | | Length | 68 | 76 | -7% |
| | | GRT | 83 | 125 | -33% |
| | | Year built | 2002 | 1980 | |
| | 600-999 | Number of vessels | 8 | 104 | |
| | | **LPUE** | **1944** | **1761** | **9%** |
| | | **Age** | 4.8 | 27.5 | |
| | | HP | 718 | 786 | -11% |
| | | Length | 81 | 82 | -2% |
| | | GRT | 121 | 159 | -22% |
| | | Year built | 2003 | 1980 | |
| | >=1000 | Number of vessels | 10 | 44 | |
| | | **LPUE** | **2514** | **2026** | **24%** |
| | | **Age** | 4.6 | 26.6 | |
| | | HP | 1218 | 1215 | 0% |
| | | Length | 90 | 91 | -1% |
| | | GRT | 176 | 184 | -4% |
| | | Year built | 2003 | 1981 | |

*Note: Age=1 is 2007.*

#### 5.4.3.4 A Simulation Model for the Analysis of the Permit Stacking and Leasing Options

The impacts of the open area DAS and access area transfers on total scallop landings, revenues, crew income and profits with and without adjustments for fishing power and mortality are analyzed using the simulation techniques, the production model and the economic model described in Appendix III. As follows:

- In the first step, simulation model estimates technological production function, outputs its coefficients and then calculates average fishing power adjustment factors using these coefficients for the vessels grouped according to their HP and length. The estimation of the production model was based on a sample of limited access vessels that were active in the fishery from 2000 to the 2007 fishing years as described in Section 5.4.3.3.1 above.
- In the second step, a scenario analysis is constructed for DAS and access area transfers. For example, scenario 1 assumes that open area DAS and access area trips are stacked on more powerful vessels with a higher LPUE, while scenario 2 second one assumes stacking assumes only within multi-boat owners. Adjustment factors and mortality adjustments are applied to estimate the open area DAS-used after stacking/leasing.
- In the third step, production model is used to project landings with and without DAS transfers and adjustments for fishing power and mortality for each of the 255 vessels.
- Using an average price, revenues are estimated for each vessel in the fleet before and after stacking/leasing.
- The trip and fixed costs are estimated using the cost models presented in Appendix III.
- It is assumed that stacking and fishing two permits on one vessel will reduce the fixed costs by 33%. This is based on the input from the Scallop advisors that most fixed cost items, including insurance, maintenance, repairs, interest payments and other administrative costs will decline by 25% if the two permits are stacked on one vessel compared to total fixed costs from fishing two vessels separately. It is assumed that total improvement costs will decline by 50% since there will be only one vessel to improve. The average composition of fixed costs for the scallop and an example with stacking of two average permits on one vessel is shown in Table 103. This scenario results in a 33% decline in overall fixed costs if the two permits are stacked on one vessel and the same percentage is used in the scenario analyses presented in the following sections.
- The sample of vessels includes all the limited access dredge vessels that had a permit in 2007 fishing year, that is, a total of 255 vessels. The scenarios are constructed using the biomass conditions, prices and costs that were experienced in 2007 fishing year, which was the most recent fishing year that was available at the time of these analyses. Constructing a scenario that was based on actual conditions during a fishing year allowed comparison of the simulation results with the actual results. It must be pointed out that the open area DAS allocations, scallop prices and costs are not expected to stay constant in the future years as the values in 2007. The future changes in those variables will affect the numerical values for the profits and producer surplus with and without stacking/leasing, but the impacts of on fleet wide profits and the producer surplus are still expected to be positive. The objective of these analyses is to analyze the impacts of permit stacking/leasing on fleet landings, revenues, costs and profits rather than to predict the impacts quantitatively for the future years.

- Finally, the impacts on profits and crew incomes are estimated as follows: The association fees, communication costs and a captain bonus of 5% are deducted from the gross stock to obtain the net stock.[9] Boat share is assumed to be 48% and the crew share is assumed to be 52% of the net stocks. Profits are estimated by deducting fixed costs from the boat share. Net crew income is estimated by deducting the trip costs from the crew shares.

**Table 103. Composition of fixed costs and reduction in fixed costs after stacking**

| Data | Annual Costs ($) | % of Total |
|---|---|---|
| Average improvement costs | 77,158 | 31% |
| Average of repairs and maintenance | 54,352 | 22% |
| Average interest payments | 28,514 | 11% |
| Average hull and liability insurance | 59,579 | 24% |
| Administrative and other costs | 31,436 | 13% |
| Total fixed costs (average per vessel) | 251,038 | 100% |
| Fixed cost for two vessels fishing separately | | |
| Data | Annual Costs ($) | |
| Average improvement costs | 154,317 | |
| Average of repairs and maintenance | 108,704 | |
| Average interest payments | 57,027 | |
| Average hull and liability insurance | 119,158 | |
| Administrative and other costs | 62,871 | |
| Total fixed costs (average per vessel) | 502,077 | |
| After stacking: Fixed costs for the active vessel | | |
| Data | Annual Costs ($) | Reduction from 2 vessels above |
| Average improvement costs | 77,158 | 50% |
| Average of repairs and maintenance | 81,528 | 25% |
| Average interest payments | 42,770 | 25% |
| Average hull and liability insurance | 89,368 | 25% |
| Administrative and other costs | 47,153 | 25% |
| Total fixed costs (average per vessel) | 337,978 | 33% |

In addition to the simulation models, the methods of estimating the potential impacts of the effort transfers on costs and profits include mathematical optimization techniques. This approach would use optimization software, such as GAMS, to simulate a DAS or access area trip stacking or a leasing market. The objective of the model would be to maximize total industry profits subject to constraints on maximum DAS-use, on DAS transfers, or permit stacking, and subject to ACT by open and access areas. This model could include the production model, the costs equations and fishing power adjustment factors for transfers from a small to a larger vessel, a lease price per DAS or per access area trip, or a sale value for the permit in the case of permit stacking. A similar approach was used in the economic analysis of the leasing options for Multispecies Amendment 13 with the shadow prices from the model indicating the value of the lease of DAS.

[9] Association fees and communication costs are estimated to equal to $1,385,330 for the fleet of FT dredge vessels.

The particular characteristics of the scallop fleet, a management system which is a combination of the output (access area trip pounds) and input (DAS allocations for open areas) controls and proposed adjustments for fishing power and for overall mortality make the application of optimization model quiet complicated. Instead, the simulation techniques were suitable for the scenario analyses of permit stacking/leasing for the following reasons:

- The ownership structure of the scallop industry, the dominance of the multi-boat owners and the limits on stacking (two permits per boat) will probably have a major impact on the permit stacking among vessels. Because there will be no cash investment involved in stacking permits on vessels owned by the same person, the stacking could take place within those vessels owned by the same person/entity even if the results of the optimization model indicated that permit stacking on another vessel would be more profitable.
- Incorporating a 13*13 matrix for fishing power adjustment and an additional 5% to 11% mortality adjustment would further complicate the construction of an optimization model.
- Given that permit stacking is limited to 2 permits on one vessel and leasing of DAS and access area trips are limited to the double of the allocation, a profit maximization model (based on mathematical optimization techniques) would probably result in a fleet size half of what it is now by transferring permits from the less efficient vessels to more powerful boats.
    - The DAS-used per vessel by the limited access vessels was about half of what has been used in the past. Table 84 above showed that DAS-used per full-time vessel (for vessels that were active in the fishery for 14 years) has declined from 180 days in 1994 to 95 days in 2007. This decline is the result of the management measures that considerably reduced open area DAS and trip allocations since 1994 rather than a result of an optimizing behavior on the part of the vessels.
    - Profits could be increased by reducing the costs of maintaining two vessels, i.e., the fixed costs as the results of the scenario analyses indicated.

Furthermore, the actual stacking/leasing patterns could differ from the results of a simulation as well as of an optimization model that does not take into account the differences in the fishing areas and landing ports of vessels and other fisheries vessels participate. One of the limitations of the simulation model, however, it does not provide or incorporate an estimate for rental value for DAS or access area trip transfers. From the perspective of the fleet as a whole, however, payments for renting DAS/trip allocations are transfer payments from one vessel to another and do not change overall cost and benefits from the proposed stacking/leasing options. Even if a rental value or a sale price per DAS was estimated, this value would change as the price of scallops, trip costs per DAS, fixed costs and the proportion of the landings from the open areas change.

The scenario analyses described in the next sections take into account the ownership status of the vessels, incorporate a 13*13 matrix of fishing power adjustment for transfers of permits to vessels with different HP and length characteristics and include an overall mortality adjustment. The results of the simulation model are discussed using two scenarios with permit stacking, one with maximum stacking in the scallop fishery such that the number of vessels in the fishery is reduced by half (Scenario 1, Section 5.4.3.5), and another one involving stacking by the multi-vessel owners only (Scenario 2, Section 5.4.3.6). This is a reasonable scenario since no cash investment would be required to buy a permit or to lease DAS and access area trips from another owner, lowering the transactions costs. These scenario analyses are based on the assumption that vessel owners could gain from stacking two permits on one vessel. In fact, the results of the scenario analyses with stacking of permits on more powerful/efficient vessels indicate that owners could increase their profits significantly by doubling the open area DAS and access area trips on one boat by reducing their fixed costs and trip expenses. Another scenario would be to assume that permits are stacked on the vessels within the same HP-Length group to avoid paying for in terms of reduced DAS for the fishing power adjustment. Yet, a less likely scenario is a transfer of DAS or permits from larger boats to less efficient vessels. The implications of these scenarios, and the results obtained with maximum stacking or multi-vessel owner stacking are discussed in Section 5.4.3.7.

#### 5.4.3.5 Scenario 1 – Maximum Stacking/DAS Leasing

Both scenarios 1 and 2 assume that open area DAS and access area trips are stacked on more powerful vessels with a higher LPUE. The extent of the increase in landings with and without fishing power and overall DAS adjustment is estimated using the following assumptions and the simulation model:

- The scenario analysis includes 255 full-time dredge vessels and do not include part-time or occasional vessels and full-time small dredge and trawl vessels. The results of the analysis are not expected to change significantly if it included all limited access vessels.
- Open area DAS allocations are assumed to be 51 days, similar to their values in 2007 fishing year. Similarly, 2007 fishing year biomass value is used to simulate the open area landings. This made it possible to compare the simulated landings with the actual values of landings in 2007 for this sample of vessels.
- Again, for the purpose of constructing a scenario which reflects the reality for the fishing year 2007, it is assumed that each full-time vessel is allocated 5 access area trips with 18,000 pound possession limit.
- It was assumed that the largest vessels leased their DAS from the smallest vessels to magnify the differences between the LPUE of the buying and selling boats as specified in the following bullets.
    - Open area DAS is assumed to be transferred from 89 smaller full-time dredge vessels to 92 larger vessels. Specifically, it is assumed that the vessels with horse power less than 864 HP transferred their DAS to larger vessels with the exception of vessels in Group 8 (larger than 70 feet and with 720 to 863 HP, Table 104).
    - The 74 vessels in fishing power group-42 (720 to 863 HP and greater than 70 feet) is assumed to transfer their DAS to the other half of the vessels in the same group.
    - DAS for all vessels in the fishing power Group-41 and lower were set to zero.
- Finally, this scenario is constructed so that the DAS transferred do not exceed twice of the DAS-used of the leasing/buying vessel, which is consistent with the Amendment 15 proposed alternative that limits leasing and stacking to double of the DAS allocation.

##### 5.4.3.5.1 The impacts of stacking/leasing on DAS-used and landings in the open areas

The impacts of these DAS transfers on scallop landings are shown in Table 105 with and without adjustment. If DAS transfer takes place as a result of permit stacking, the number of full-time dredge boats would decline from 255 to 128 vessels in this scenario. The total transferred and used DAS after adjustments are shown in Table 104. In this scenario, about 6,426 days are transferred from smaller vessels and after adjustments 5,232 days of this could be used by the larger vessels that leased DAS. As a result, overall DAS-used would decline by 5.2% if only fishing power adjustment is applied and by 9.2% after adjusting both for fishing power and mortality (an additional 9%). With both adjustments, open area DAS used would decline from 13,005 days to 11,811 days as a result of the stacking/leasing activity.

The transfer of DAS from small to large vessels without any adjustment is estimated to increase scallop landings by almost 11% (Table 105, Column 5). If the transferred DAS is adjusted only for the difference in fishing power using the adjustment factors in Table 39, total scallop landings would still increase by 4.1% (column 6). The results of the simulation model showed that a 9% adjustment is necessary to the transferred DAS after fishing power adjustment in order to prevent an increase in landings.

Applying a fishing power adjustment and a 9% overall DAS adjustment would keep the projected landings at almost pre-stacking/leasing levels according to the production model estimates (Column 7, Table 105). It should be cautioned, however, that the landings could increase more than 9% due to the factors that could not be fully taken into account with the production model as described above, including the quality of vessel platform and crew, changes in fishing patterns, other adjustments to vessel HP etc. that could increase vessel's effectiveness and LPUE. Therefore, the overall DAS adjustment may need to be larger than 9% to prevent an increase in the fishing mortality with DAS leasing or permit stacking due to the factors that cannot be captured by the production model.

**Table 104 - Scenario 1: Permit-Stacking/Open Area DAS leasing - Total open area DAS-used before and after leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS adjustment and (Assuming 51 DAS used)**

| Fishing Power Group | Open Area DAS-used before leasing (Column 2) | After Leasing | | | | |
|---|---|---|---|---|---|---|
| | | Number of vessels before leasing (Column 3) | Number of active vessels after leasing (Column 4) | Unadjusted DAS (Column 4) | Leased DA (Adjusted for Fishing Power) (Column 5) | Leased DA (Adjusted for Fishing Power plus 9% reduction ) (Column 6) |
| 11 | 255 | 5 | - | - | - | - |
| 12 | 459 | 9 | - | - | - | - |
| 21 | 255 | 5 | - | - | - | - |
| 22 | 1275 | 25 | - | - | - | - |
| 31 | 204 | 4 | - | - | - | - |
| 32 | 1887 | 37 | - | - | - | - |
| 41 | 204 | 4 | - | - | - | - |
| 42 | 3774 | 74 | 37 | 3,774 | 3,774 | 3604 |
| 51+52 | 1581 | 31 | 30 | 3,009 | 2887 | 2765 |
| 62 | 1938 | 38 | 38 | 3,876 | 3597 | 3448 |
| 72 | 612 | 12 | 12 | 1,224 | 1101 | 1057 |
| 82 | 561 | 11 | 11 | 1,122 | 971 | 934 |
| Total | 13,005 | 255 | **128** | 13,005 | 12,330 | 11,808 |
| % Change | | | | | -5.2% | -9.2% |

**Table 105 - Scenario 1: Permit-Stacking/Open Area DAS leasing - Total open area landings before and after leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used)**

| Fishing Power Group | Scallop landings by the group before leasing (Column 2) | Number of vessels before leasing (Column 3) | Number of active vessels after leasing (Column 4) | Scallop landings after leasing (No adjustment) (Column 5) | Scallop landings after leasing (after fishing power adjustment) (Column 6) | Scallop landings after leasing (after fishing power and 9% DAS adjustment) (Column 7) |
|---|---|---|---|---|---|---|
| 11 | 316,390 | 5 | - | - | - | - |
| 12 | 594,822 | 9 | - | - | - | - |
| 21 | 338,438 | 5 | - | - | - | - |
| 22 | 1,726,915 | 25 | - | - | - | - |
| 31 | 280,614 | 4 | - | - | - | - |
| 32 | 2,674,737 | 37 | - | - | - | - |
| 41 | 293,775 | 4 | - | - | - | - |
| 42 | 5,638,776 | 74 | 37 | 5,921,595 | 5,921,595 | 5,636,769 |
| 51+52 | 2,450,393 | 31 | 31 | 4,896,418 | 4,684,370 | 4,472,526 |
| 62 | 3,119,789 | 38 | 38 | 6,552,532 | 6,048,988 | 5,780,563 |
| 72 | 1,017,275 | 12 | 12 | 2,136,595 | 1,907,715 | 1,826,184 |
| 82 | 975,629 | 11 | 11 | 2,049,126 | 1,755,629 | 1,684,283 |
| Total | 19,427,553 | 255 | 129 | 21,556,267 | 20,318,297 | 19,400,325 |
| % Change | | | | 11.0% | 4.6% | -0.1% |

### 5.4.3.5.2 The economic impacts of the open area DAS transfers on costs, revenues and producer surplus by fishing power group

Because the open area DAS is transferred to more efficient vessels that can land the same amount of scallops in less time and because the overall DAS-used is reduced as a result of fishing power and mortality adjustments, the overall trips costs will decline The reduction in trip costs would be about 1.8% after the fishing power adjustments and about 5.9% after applying both fishing power and mortality adjustments (Table 106). The decline in overall trips costs are less than the percentage decline in overall DAS-used because the simulation model takes into account the fact that larger boats have higher trip costs per DAS compared to the smaller boats.

**Table 106 - Scenario 1: Permit-Stacking/Open Area DAS leasing - Total open area trip costs and revenues with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming $6.50 price per pound of scallops)**

| Fishing Power Group | Total Trip costs for the group | | | Total Fixed Costs after Stacking* | |
|---|---|---|---|---|---|
| | Before leasing/ stacking (Column 2) | After leasing and power adjustment (Column 3) | After leasing, power and 9% mortality adjustment (Column 4) | Before leasing/ stacking (Column 5) | After leasing and power adjustment (Column 6) |
| 11 | 302,426 | - | - | 709,487 | - |
| 12 | 698,563 | - | - | 1,711,839 | - |
| 21 | 342,973 | - | - | 865,672 | - |
| 22 | 2,049,318 | - | - | 4,845,922 | - |
| 31 | 284,599 | - | - | 727,268 | - |
| 32 | 3,003,394 | - | - | 9,325,271 | - |
| 41 | 332,583 | - | - | 637,368 | - |
| 42 | 6,333,746 | 6,333,746 | 6,048,728 | 17,216,888 | 11,449,230 |
| 51+52 | 2,632,256 | 4,827,953 | 4,623,706 | 8,902,785 | 11,601,426 |
| 62 | 3,385,294 | 6,283,333 | 6,022,510 | 11,261,032 | 14,977,172 |
| 72 | 1,055,788 | 1,899,517 | 1,823,581 | 4,243,160 | 5,643,402 |
| 82 | 955,006 | 1,653,209 | 1,590,371 | 4,162,148 | 5,535,656 |
| Total | 21,375,946 | 20,997,759 | 20,108,895 | 64,608,838 | 49,206,887 |
| % Change | | -1.8% | -5.9% | | -24% |

If the DAS transfers take place as a result of ***permit stacking***, the fixed costs will decline as well. As indicated above, it is assumed that if an owner stacked its 2 permits on one boat, his/her fixed costs (incurred on both boats) will decline by 33%. Table 106 shows that overall fleet costs will decline by 24%, not by 33%, because the permits are stacked on larger boats with higher fixed costs. It is realistic to assume that a newer larger vessel would have a higher value, thus its hull insurance could be larger than a smaller and older boat. On the other hand, there may be fewer repairs needed on the newer better vessel, and the costs may decline by more than 33%. In that case, overall decline in fixed costs and the increase in profits will be larger than shown in those tables.

It is also assumed that the vessels that are stacked from are either scrapped or sold so that no maintenance and insurance expenses will be incurred for these vessels. The reduction in fixed costs would be less if the costs of scraping or keeping the vessel at the dock until it is sold are taken into account. In the case of DAS leasing, the fixed costs would either stay the same or decline in a smaller amount as will be discussed in Section 5.4.3.7 below. The fixed costs show the changes for all areas, whereas, the trip costs are estimated for the open area fishing only, later to be combined with the trip costs for fishing in the access areas.

If the fishing power and mortality adjustments are successful in keeping the landings at the same level, there would be no change in revenues after permit stacking/DAS leasing and the overall producer surplus would increase slightly by 1% due to the decline in the trip costs (Table 107). Table 108 summarizes the results for DAS stacking/leasing. Again, the changes in the estimated fixed costs would occur only if the two permits were stacked on one vessel. Therefore, the reduction in fixed costs are due to permit stacking, whereas the changes in the trip cost, revenues, and producer surplus correspond to the changes in trip costs, revenues and producer surplus as a result of using two DAS allocations on one vessel either as a result of permit stacking or DAS leasing.

**Table 107 - Scenario 1: Permit-Stacking/Open Area DAS leasing - Total open area trip costs and revenues with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming $6.50 price per pound of scallops)**

| Fishing Power Group | Total Scallop Revenue for the group | | | Total Producer Surplus* | | |
|---|---|---|---|---|---|---|
| | Before leasing/ stacking (Column 2) | After leasing and power adjustment (Column 3) | After leasing, power and 9% mortality adjustment (Column 4) | Before leasing/ stacking (Column 5) | After leasing and power adjustment (Column 6) | After leasing, power and 9% mortality adjustment (Column 7) |
| 11 | 2,056,536 | - | - | 1,754,111 | - | - |
| 12 | 3,866,345 | - | - | 3,167,781 | - | - |
| 21 | 2,199,850 | - | - | 1,856,877 | - | - |
| 22 | 11,224,945 | - | - | 9,175,627 | - | - |
| 31 | 1,823,990 | - | - | 1,539,392 | - | - |
| 32 | 17,385,792 | - | - | 14,382,398 | - | - |
| 41 | 1,909,539 | - | - | 1,576,956 | - | - |
| 42 | 36,652,041 | 38,490,371 | 36,639,001 | 30,318,294 | 32,156,624 | 30,590,273 |
| 51+52 | 15,927,552 | 30,448,402 | 29,071,417 | 13,295,296 | 25,620,449 | 24,447,712 |
| 62 | 20,278,629 | 39,318,421 | 37,573,659 | 16,893,335 | 33,035,088 | 31,551,149 |
| 72 | 6,612,286 | 12,400,149 | 11,870,197 | 5,556,499 | 10,500,633 | 10,046,615 |
| 82 | 6,341,589 | 11,411,588 | 10,947,841 | 5,386,583 | 9,758,379 | 9,357,471 |
| Total | 126,279,095 | 132,068,932 | 126,102,114 | 104,903,149 | 111,071,173 | 105,993,219 |
| % Change | | 4.6% | -0.1% | | 6% | 1% |

**Table 108 - Scenario 1: Maximum stacking -- Change in landings, DAS-used, revenues and costs as a result of open area DAS stacking/leasing (Assuming $6.50 price per pound of scallops)**

| Scenario | Data | Total | % Change from Status Quo |
|---|---|---|---|
| Status quo | Number of active vessels | 255 | |
| | DAS used | 13,005 | |
| | Scallop landings | 19,427,553 | |
| | Scallop revenue | 126,279,095 | |
| | Trip costs | 21,375,946 | |
| | Fixed costs* | 64,608,838 | |
| | Producer surplus | 104,903,149 | |
| | Total number of crew | 1,083 | |
| Stacking/leasing Fishing Power adjustment | Number of vessels | 126 | -49% |
| | DAS used | 12,330 | -5% |
| | Scallop landings | 20,318,297 | 5% |
| | Scallop revenue | 132,068,932 | 5% |
| | Trip costs | 20,997,759 | -2% |
| | Fixed costs* | 49,206,887 | -24% |
| | Producer surplus | 111,071,173 | 6% |
| | **Total number of crew** | 867 | -20% |
| Stacking/leasing Fishing Power + 9% Mortality adjustment | Number of vessels | 128 | -49% |
| | DAS used | 11,808 | -9% |
| | Scallop landings | 19,400,325 | 0% |
| | Scallop revenue | 126,102,114 | 0% |
| | Trip costs | 20,108,895 | -6% |
| | Fixed costs* | 49,206,887 | -24% |
| | Producer surplus | 105,993,219 | 1% |
| | **Total number of crew** | 867 | -20% |

*Note that the reduction in fixed costs are due to permit stacking, whereas the changes in the trip cost, revenues, and producer surplus reflect only values associated with fishing in the open areas.

### 5.4.3.5.3 The impact of DAS transfers on future revenues of vessels that are not involved in stacking/leasing

Table 109 provides a straightforward analysis of the consequences of the DAS transfers on vessels that are not involved with stacking/leasing. If no adjustments were made for fishing power and increased efficiency, scallop landings would increase by 11% as two permits are stacked on one vessel as shown in Table 105 above. As a result, the DAS allocations would have to be reduced during the next management cycle to prevent fishing mortality exceeding target levels. In order to provide a rough estimate of the impacts, it is assumed that it would be necessary to reduce DAS allocations in the same proportion as the increase in landings. Assuming a 51 days-at-sea allocation, an 11% reduction in allocation would reduce DAS by 5.6 days for all vessels in the fleet whether or not they have engaged in DAS leasing or permit stacking. Assuming an average LPUE of 1585 pound per DAS and a price of $7.0 per pound of scallops, this reduction in DAS allocations could reduce the open area scallop revenue by $62,243 per vessel. If adjustment was made for fishing power but no additional mortality adjustment was applied, the reduction in allocations in the next period would be 4.1% and the reduction in average scallop revenue per vessel would be $23,200.

Actual impacts will be less or more than these amounts depending on the overall scallop biomass in the open and access areas, the fishing mortality targets and the extent of the adjustment in DAS allocations that would be necessary to keep landings at sustainable levels after stacking/DAS leasing and the price of scallops. If the DAS is transferred to newer boats and if the LPUE and fishing mortality increase even after the fishing power and mortality adjustments, the revenues of the boats that are not involved in stacking/open area leasing would still decline as the allocations are reduced in the next management cycle to offset the increase in fishing mortality. On the other hand, if the mortality adjustment exceeds the actual increase in efficiency as a result of the DAS transfers, there would a decline in fishing mortality in the period the stacking takes place. If the open area DAS allocations are increased in the next period to make adjustment for the decline in fishing mortality, however, the vessels that were not involved in stacking/leasing would also reap the benefits of a reduced fleet size.

**Table 109 - Scenario 1: The estimated decline in open area DAS, Scallop Landings and Revenue with adjustment of DAS allocations in the next management period (assuming a base open area DAS of 51 days, average LPUE of 1585 pound per day and scallop price of $7 per pound)**

| *DAS adjustment Scenarios* | *Adjustment in Open Area DAS* | *Reduction in DAS Allocations per FT vessel* | *Reduction in Scallop landings per vessel* | *Reduction in Scallop Revenue per vessel* |
|---|---|---|---|---|
| No adjustment | 11.0% | 5.6 days | 8,892 | $62,243 |
| Fishing power adjustment only (No Mortality Adjustment) | 4.1% | 2.1 days | 3,314 | $23,200 |

### 5.4.3.5.4 The economic impacts of permit stacking on total landings, revenue, costs, crew incomes and profits

This section analyzes the impacts of permit stacking on revenues, costs, producer surplus, crew incomes and profits from both open and access areas. As such, the results show the benefits of using DAS and access area allocations on one vessel which were previously fished by two separate vessels. The economic impacts of stacking/leasing on landings, revenues, costs, profits and crew incomes are shown in Table 110 to Table 114 by vessel HP-length groups and summarized in Table 115 below for the overall fleet. The results could be summarized as follows:

- Scenario 1 assumes and is constructed such that the number of full-time dredge vessels declines from 255 to 128 vessels. Furthermore, it was assumed that the permits are stacked on larger boats. As a result of this consolidation, total scallop landings from both open and access areas would increase by 6% if transferred DAS was not adjusted (i.e., reduced) for fishing power and overall increase in efficiency. This is the result of the 11% increase in open area landings and no increase in the access area landings because of the trip limits. If open area DAS transfers were adjusted by fishing power, overall landings would still increase by 2%. An additional 9% overall mortality adjustment would prevent the increase in landings and mortality (Table 110).

- Total scallop revenue from open and access areas would increase by 2% if open are DAS transfers are adjusted for fishing power only and would stay at almost the same levels after overall mortality adjustment (Table 111).

- Overall fleet trip costs would decline by 4% and fixed costs by 24% due to stacking, resulting in an increase in profits by 30% if the savings in trips costs go to the crew shares, or by 38% if the savings in trip costs leads to an increase in boat shares by a modification of the lay system (Table 112, Table 113, Table 114). Producer surplus measured by the difference of total revenue from variable costs would increase by 3% (Table 115).

- For the same scenario (Scenario 1), permit stacking with a 9% mortality adjustment is estimated to keep the landings and revenues at the same levels, reduce the trip costs by 6% and the fixed costs by 24%. As a result, profits would increase by 26% if the savings in trips costs go to the crew shares or by 30% if the savings in trip costs leads to an increase in boat shares through a modification of the lay system. There would a slight increase in producer surplus by 1%. This increase is just for one year, however, and the cumulative long-term producer surplus and total economic benefits would be larger over the long-term. For example, if the produce surplus was $5 million larger each year, cumulative present value of producer surplus over a 20 year period would be about $80 million larger compared to producer surplus with no stacking.

- The main benefits of permit stacking would be an increase industry profits by 26% to 30% if the future open area DAS allocations and access area landings, scallop prices, the values of trip and fixed costs were similar to the levels for 2007. It must be pointed out that the transaction costs from stacking/leasing or costs of scraping or selling a vessel are not included in the overall costs. Similarly, profits do not include actual or opportunity costs of obtaining the permit stacked on one vessel. These later expenses are transfer costs from one vessel to another, thus, they cancel out when overall industry profits are considered. The percentage increase in the profits of the individual vessels that stack permits would be less than shown below, however, depending on the costs of acquiring the permit and of eliminating the second vessel an owner has either by selling and/or scraping.

- Since a major proportion of the economic benefits from stacking are due to a decline in fixed costs, if these costs stay fairly constant but the scallop prices and landings increased (decreased) in the future, the percentage increase in profits would be smaller (larger) than shown in the Tables below. An increase in fixed costs, such as insurance expenses, would make stacking even more profitable, however.

**Table 110 - Scenario 1: Permit-Stacking/ DAS and access area trip leasing - Total landings from all areas before and after leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used, and 5 access area trips at 18,000pound possession limit)**

| Fishing Power Group | Scallop landings by the group before stacking /leasing (Column 2) | Number of vessels before leasing (Column 3) | Number of active vessels after leasing (Column 4) | Scallop landings after stacking/ leasing (No adjustment) (Column 5) | Scallop landings after stacking/ leasing (after fishing power adjustment) (Column 6) | Scallop landings after stacking/ leasing (after fishing power and 9% DAS adjustment) (Column 7) |
|---|---|---|---|---|---|---|
| 11 | 766,390 | 5 | - | - | - | - |
| 12 | 1,404,822 | 9 | - | - | - | - |
| 21 | 788,438 | 5 | - | - | - | - |
| 22 | 3,976,915 | 25 | - | - | - | - |
| 31 | 640,614 | 4 | - | - | - | - |
| 32 | 6,004,737 | 37 | - | - | - | - |
| 41 | 653,775 | 4 | - | - | - | - |
| 42 | 12,298,776 | 74 | 37 | 12,581,595 | 12,581,595 | 12,296,769 |
| 51+52 | 5,240,393 | 31 | 31 | 10,476,418 | 9,994,370 | 9,782,526 |
| 62 | 6,539,789 | 38 | 38 | 13,392,532 | 12,888,988 | 12,620,563 |
| 72 | 2,097,275 | 12 | 12 | 4,296,595 | 4,067,715 | 3,986,184 |
| 82 | 1,965,629 | 11 | 11 | 4,029,126 | 3,735,629 | 3,664,283 |
| Total | 42,377,553 | 255 | 128 | 44,776,267 | 43,268,297 | 42,350,325 |
| % Change | | | | 6% | 2% | 0.6% |

**Table 111 - Scenario 1: Permit-Stacking/ DAS and access area trip leasing - Total revenue from all areas before and after leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used, and 5 access area trips at 18,000pound possession limit)**

| Fishing Power Group | Number of vessels (Column 2) | Total Scallop revenue before stacking/ leasing (No adjustment) | Total Scallop revenue after stacking/ leasing (after fishing power adjustment) | Total Scallop revenue after stacking/ leasing (after fishing power and 9% DAS adjustment) | Scallop revenue per vessel before stacking/ leasing | Scallop revenue per vessel after stacking/ leasing (after fishing power and 9% DAS adjustment) |
|---|---|---|---|---|---|---|
| 11 | 5 | 4,981,536 | - | - | 996,307 | - |
| 12 | 9 | 9,131,345 | - | - | 1,014,594 | - |
| 21 | 5 | 5,124,850 | - | - | 1,024,970 | - |
| 22 | 25 | 25,849,945 | - | - | 1,033,998 | - |
| 31 | 4 | 4,163,990 | - | - | 1,040,998 | - |
| 32 | 37 | 39,030,792 | - | - | 1,054,886 | - |
| 41 | 4 | 4,249,539 | - | - | 1,062,385 | - |
| 42* | 74* | 79,942,041 | 81,780,371 | 79,929,001 | 1,080,298 | 2,160,244 |
| 51+52 | 31 | 34,062,552 | 65,548,402 | 64,171,417 | 1,098,792 | 2,070,046 |
| 62 | 38 | 42,508,629 | 83,778,421 | 82,033,659 | 1,118,648 | 2,158,780 |
| 72 | 12 | 13,632,286 | 26,440,149 | 25,910,197 | 1,136,024 | 2,159,183 |
| 82 | 11 | 12,776,589 | 24,281,588 | 23,817,841 | 1,161,508 | 2,165,258 |
| Total | 255 | 275,454,095 | 281,243,932 | 275,277,114 | | - |
| % Change | | | 2% | 0.15% | | |

Note: After stacking it is assumed that 37 vessel will remain to be active in fishing power group 42.

**Table 112 - Scenario 1: Permit-Stacking/ DAS and access area trip leasing – Trip and fixed costs before and after /stacking leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used, and 5 access area trips at 18,000pound possession limit)**

| Fishing Power Group | Number of vessels (Column 2) | Total trip costs before stacking/ leasing (No adjustment) | Total Trip costs after stacking/ leasing (after fishing power adjustment) | Total trip costs after stacking/ leasing (after fishing power and 9% DAS adjustment) | Total fixed costs before stacking/ leasing | Total fixed costs after stacking/ leasing |
|---|---|---|---|---|---|---|
| 11 | 5 | 532,366 | - | - | 709,487 | - |
| 12 | 9 | 1,229,696 | - | - | 1,711,839 | - |
| 21 | 5 | 603,743 | - | - | 865,672 | - |
| 22 | 25 | 3,607,458 | - | - | 4,845,922 | - |
| 31 | 4 | 469,040 | - | - | 727,268 | - |
| 32 | 37 | 4,949,816 | - | - | 9,325,271 | - |
| 41 | 4 | 548,122 | - | - | 637,368 | - |
| 42* | 74* | 10,431,880 | 10,236,731 | 9,951,712 | 17,216,888 | 11,449,230 |
| 51+52 | 31 | 4,263,933 | 7,796,398 | 7,592,150 | 8,902,785 | 11,601,426 |
| 62 | 38 | 5,402,872 | 10,126,339 | 9,865,516 | 11,261,032 | 14,977,172 |
| 72 | 12 | 1,685,019 | 3,098,053 | 3,022,117 | 4,243,160 | 5,643,402 |
| 82 | 11 | 1,524,174 | 2,737,338 | 2,674,499 | 4,162,148 | 5,535,656 |
| Total | 255 | 35,248,119 | 33,994,859 | 33,105,995 | 64,608,838 | 49,206,887 |
| % Change | | | -4% | -6% | | -24% |

Note: After stacking it is assumed that 37 vessel will remain to be active in fishing power group 42.

**Table 113 - Scenario 1: Permit-Stacking/ DAS and access area trip leasing – Net crew income before and after /stacking leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used, and 5 access area trips at 18,000pound possession limit)**

| Fishing Power Group | Number of vessels (Column 2) | Net crew income before stacking/ leasing (No adjustment) | Net crew income after stacking/ leasing (after fishing power adjustment) | Net crew income after stacking/ leasing (after fishing power and 9% DAS adjustment) |
|---|---|---|---|---|
| 11 | 5 | 2,165,515 | - | - |
| 12 | 9 | 3,714,784 | - | - |
| 21 | 5 | 2,172,101 | - | - |
| 22 | 25 | 10,392,065 | - | - |
| 31 | 4 | 1,786,512 | - | - |
| 32 | 37 | 16,180,590 | - | - |
| 41 | 4 | 1,753,968 | - | - |
| 42 | 74 | 32,844,474 | 34,145,733 | 33,423,606 |
| 51+52 | 31 | 14,174,526 | 27,454,539 | 26,909,707 |
| 62 | 38 | 17,606,542 | 35,333,842 | 34,645,515 |
| 72 | 12 | 5,694,540 | 11,248,984 | 11,036,625 |
| 82 | 11 | 5,392,920 | 10,438,476 | 10,249,036 |
| Total | 255 | 113,878,537 | 118,621,574 | 116,264,489 |
| % Change | | | 4.2% | 2.1% |

**Table 114 – Scenario 1: Profits before and after /stacking leasing with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment and (Assuming 51 DAS used, and 5 access area trips at 18,000pound possession limit)**

| Fishing Power Group | Number of vessels (Column 2) | Profits before stacking/ leasing (No adjustment) | Profits after stacking/ leasing (after fishing power adjustment) | Profits after stacking/ leasing (after fishing power and 9% DAS adjustment) |
|---|---|---|---|---|
| 11 | 5 | 1,550,948 | - | - |
| 12 | 9 | 2,430,850 | - | - |
| 21 | 5 | 1,460,114 | - | - |
| 22 | 25 | 6,883,640 | - | - |
| 31 | 4 | 1,162,595 | - | - |
| 32 | 37 | 8,378,298 | - | - |
| 41 | 4 | 1,291,505 | - | - |
| 42 | 74 | 19,040,883 | 25,744,719 | 24,900,494 |
| 51+52 | 31 | 6,545,214 | 17,939,589 | 17,311,684 |
| 62 | 38 | 8,016,491 | 23,119,376 | 22,323,764 |
| 72 | 12 | 1,939,559 | 6,379,702 | 6,138,044 |
| 82 | 11 | 1,633,173 | 5,505,944 | 5,294,476 |
| Total | 255 | 60,333,271 | 78,689,331 | 75,968,462 |
| % Change | | | 30.4% | 25.9% |

Note that if all the increase in crew income actually goes to profits by a change in lay system, that the total profits would go up to $78,769,345, which would a 31% increase in profits.

**Table 115 - Scenario 1: Permit-Stacking/DAS plus access area leasing – Change in landings, DAS-used, revenues and costs (Assuming $6.50 price per pound of scallops)**

| Scenario | Data | Total | % Change from Status Quo |
|---|---|---|---|
| Status quo (255 vessels) | Scallop landings | 42,377,553 | |
| | Scallop revenue | 275,454,095 | |
| | Trip costs | 35,248,119 | |
| | Fixed costs | 64,608,838 | |
| | Net crew income | 113,878,537 | |
| | Profits | 60,333,271 | |
| | Producer surplus | 240,205,976 | |
| Stacking/leasing Fishing Power adjustment (128 vessels) | Scallop landings | 43,268,297 | 2% |
| | Scallop revenue | 281,243,932 | 2% |
| | Trip costs | 33,994,859 | -4% |
| | Fixed costs | 49,206,887 | -24% |
| | Net crew income | 118,621,574 | 4% |
| | Profits (Crew income increase) | 78,689,331 | 30% |
| | Profits (Crew income same) | 83,432,367 | 38% |
| | Producer Surplus* | 247,249,073 | 3% |
| Stacking/leasing Fishing Power + 9% Mortality adjustment (128 vessels) | Scallop landings | 42,350,325 | 0% |
| | Scallop revenue | 275,277,114 | 0% |
| | Trip costs | 33,105,995 | -6% |
| | Fixed costs | 49,206,887 | -24% |
| | Net crew income | 116,264,489 | 2% |
| | Profits (Crew income increase) | 75,968,462 | 26% |
| | Profits (Crew income same) | 78,354,414 | 30% |
| | Producer Surplus* | 242,171,119 | 1% |

*Does not include the savings in fixed costs.

### 5.4.3.6 Scenario 2 –Multi-vessel owner stacking/DAS leasing

This scenario assumes that permit stacking happens only among the multi-boat owners and single boat owners do not engage in any DAS leasing or permit stacking. Like in Scenario 2, this scenario also assumes that open area DAS and access area trips are transferred from smaller vessels to larger vessels of the multi-boat owners. Same assumptions used in Scenario 1 regarding the DAS allocations and biomass are also used in this scenario.

The impacts of these DAS transfers on scallop landings and the fleet size are summarized in Table 116 by ownership type. Table 117 shows the results by HP and length group. Without any adjustment, transfer of DAS from small to large vessels would result in an increase of scallop landings by 9% because the landings by multi-boat owners constitute about 80% of the scallop landings by full-time dredge vessels (Column 5). If the transferred DAS is adjusted only for the difference in fishing power using the adjustment factors in Table 39, total scallop landings would still increase by 5% (Column 6). Applying a fishing power and a 9% DAS adjustment would keep the projected landings at almost pre-leasing levels (Column 7). It should be cautioned, however, that the landings could increase more than 9% due to the factors that could not be fully taken into account with the production model as described above, including the quality of vessel platform and crew, changes in fishing patterns, other adjustments to vessel HP etc. that could increase vessel's effectiveness and LPUE. Therefore, the overall DAS adjustment may need to be larger than 9% to prevent an increase in the fishing mortality with DAS leasing or permit stacking.

The potential impacts of these transfers on open area DAS allocations with and without adjustments are shown in Table 118. If no adjustment is applied to the DAS transfers and landings increased by 9%, DAS allocations might have to reduced during the next management cycle to prevent fishing mortality exceeding sustainable levels. Assuming a 51 days-at-sea allocation, LPUE of 1585 pound per DAS, a 9% reduction in allocation could reduce open area scallop revenue by $50,926. As a result, the vessels that were not engaged in stacking/leasing could also incur a loss in revenue due to the permit stacking or leasing by other vessels in the fleet. If adjustment was made for fishing power but not for DAS, the reduction in allocations in the next period would be about 4% and the reduction in average scallop revenue per vessel would be $22,634. Again, actual impacts would be less or more than these amounts depending on the overall scallop biomass in the open and access areas, scallop prices, the fishing mortality targets and the extent of the adjustment in DAS allocations that would be necessary to keep landings at sustainable levels after stacking/DAS leasing.

**Table 116. Scenario 2: Permit-Stacking/Open Area DAS leasing by Multiple boat owners only (Including only FT Dredge vessels, assuming 51 DAS allocation, 2007 resource biomass and using Cobb-Douglas Production Function Estimates)**

| Data | Multiple Owners | Single Owners | Unknown | Grand Total |
|---|---|---|---|---|
| Number of vessels before stacking | 202 | 46 | 7 | 255 |
| Number of vessels after stacking | 101 | 46 | 7 | 154 |
| Estimated DAS-used before stacking | 10,302 | 2,346 | 357 | 13,005 |
| Adjusted DAS-used after stacking | 9,790 | 2,346 | 357 | 12,493 |
| Adjusted DAS-used after fishing power and DAS adjustment | 9,370 | 2,346 | 357 | 12,073 |
| Percentage Change in DAS-used | -9% | 0% | 0% | -7% |
| Estimated landings before stacking | 15,353,965 | 3,561,720 | 511,868 | 19,427,553 |
| Estimated landings after stacking with no adjustment | 17,006,920 | 3,561,720 | 511,868 | 21,080,508 |
| Percentage Change in landings | 11% | 0% | 0% | 9% |
| Estimated landings after stacking with fishing power adjustment | 16,069,791 | 3,561,720 | 511,868 | 20,143,378 |
| Percentage Change in landings | 5% | 0% | 0% | 4% |
| Estimated landings after stacking with fishing power adjustment and DAS adj. | 15,334,762 | 3,561,720 | 511,868 | 19,408,350 |
| Percentage Change in landings | -0.2% | 0.0% | 0.0% | -0.1% |

**Table 117. Scenario 2: Permit-Stacking/Open Area DAS leasing among multi-boat owners - Total open area landings before and after leasing by *multi-boat owners* with and without adjustment for fishing power (2007) and for 9% Overall DAS adjustment and (Assuming 51 DAS used)**

| Fishing Power Group | Scallop landings by the group before leasing (Column 2) | Number of vessels before leasing (Column 3) | Number of active vessels after leasing (Column 4) | Scallop landings after leasing (No adjustment) (Column 5) | Scallop landings after leasing (after fishing power adjustment) (Column 6) | Scallop landings after leasing (after fishing power and 10% DAS adjustment) (Column 7) |
|---|---|---|---|---|---|---|
| 11 | 253,206 | 4 | - | - | - | - |
| 12 | 397,703 | 6 | - | - | - | - |
| 21 | 271,153 | 4 | - | - | - | - |
| 22 | 1,312,161 | 19 | - | - | - | - |
| 31 | 280,614 | 4 | - | - | - | - |
| 32 | 2,459,371 | 34 | - | - | - | - |
| 41 | 148,622 | 2 | 2 | 312,153 | 309,530 | 289,127 |
| 42 | 4,726,387 | 62 | 32 | 5,044,080 | 4,882,810 | 4,716,767 |
| 51+52 | 1,898,360 | 24 | 24 | 4,076,145 | 4,040,397 | 3,690,113 |
| 62 | 2,303,951 | 28 | 28 | 4,839,018 | 4,455,495 | 4,293,187 |
| 72 | 504,293 | 6 | 6 | 1,059,173 | 945,031 | 921,313 |
| 82 | 798,144 | 9 | 9 | 1,676,351 | 1,436,527 | 1,419,076 |
| Total | 15,353,965 | 202 | 101 | 17,006,920 | 16,069,791 | 15,329,583 |
| % Change | | | | 11% | 5% | -0.2% |

**Table 118 - Scenario 2: The estimated decline in open area DAS, Scallop Landings and Revenue with adjustment of DAS allocations in the next management period (assuming a base open area DAS of 51 days, average LPUE of 1585 pound per day and scallop price of $7 per pound)**

| *DAS adjustment Scenarios* | *Adjustment in Open Area DAS* | *Reduction in DAS Allocations per FT vessel* | *Reduction in Scallop landings per vessel* | *Reduction in Scallop Revenue per vessel* |
|---|---|---|---|---|
| No adjustment | 9% | 4.6 | 7,275 | 50,926 |
| Fishing power adjustment only (No DAS Adjustment) | 4% | 2.0 | 3,233 | 22,634 |

### 5.4.3.6.1 Overall impacts on costs - Scenario 2 – Multi-vessel Owner Stacking/DAS Leasing

The economic impacts of permit stacking/DAS leasing on revenues, costs, profits and crew incomes are shown by vessel HP-length groups and summarized in below for the overall fleet.

**Table 119 - Scenario 2: Permit-Stacking/Open Area DAS leasing - Total open area trip costs with and without adjustment for fishing power (2007) and for 9% Overall DAS Adjustment**

| Fishing Power Group | Total Trip costs for the group | | | Total Fixed Costs after Stacking* | |
|---|---|---|---|---|---|
| | Before leasing/ stacking (Column 2) | After leasing and power adjustment (Column 3) | After leasing, power and 9% mortality adjustment (Column 4) | Before leasing/ stacking (Column 5) | After leasing and power adjustment (Column 6) |
| 11 | 302,426 | 57,610 | 57,610 | 709,487 | 157,991 |
| 12 | 698,563 | 228,170 | 228,170 | 1,711,839 | 627,066 |
| 21 | 342,973 | 61,791 | 61,791 | 865,672 | 219,011 |
| 22 | 2,049,318 | 493,752 | 493,752 | 4,845,922 | 1,053,765 |
| 31 | 284,599 | - | - | 727,268 | - |
| 32 | 3,003,394 | 232,175 | 232,175 | 9,325,271 | 574,115 |
| 41 | 332,583 | 507,608 | 491,856 | 637,368 | 746,510 |
| 42 | 6,333,746 | 6,333,746 | 6,099,214 | 17,216,888 | 12,398,989 |
| 51+52 | 2,632,256 | 4,642,974 | 4,462,010 | 8,902,785 | 11,341,592 |
| 62 | 3,385,294 | 5,520,343 | 5,328,189 | 11,261,032 | 14,081,495 |
| 72 | 1,055,788 | 1,484,277 | 1,445,713 | 4,243,160 | 4,886,864 |
| 82 | 955,006 | 1,529,892 | 1,478,152 | 4,162,148 | 5,282,029 |
| Total | 21,375,946 | 21,092,338 | 20,378,630 | 64,608,838 | 51,369,427 |
| % Change | | -1% | -5% | | -20% |

* It's assumed that the vessels that are stacked from are either scrapped or sold so that they do not have any fixed costs for the owner after stacking. In the case of DAS leasing, the fixed costs would either stay the same or decline much less.

### 5.4.3.6.2 Overall economic impacts: Scenario 2 - Multi-boat Owner Stacking/DAS and Access area trip leasing

The economic impacts on revenues, costs, profits and crew incomes are summarized below in Table 120 for multi-boat owners stacking scenario. The results are similar to maximum fleet stacking although it involves with 202 instead of 255 full-time dredge vessels as in scenario 1.

**Table 120 - Scenario 2: MULTI-Boat owners only - Permit-Stacking/DAS plus access area leasing – Change in landings, DAS-used, revenues and costs (Assuming $6.50 price per pound of scallops)**

| Scenario | Data | Total | % Change from Status Quo |
|---|---|---|---|
| (202 vessels) | Scallop revenue | 217,970,774 | |
| Status quo | Trip costs | 27,939,472 | |
| | Fixed costs | 51,547,419 | |
| | Net crew income | 90,065,286 | |
| | Profits | 47,319,860 | |
| Fishing Power adjustment | Scallop revenue | 222,623,639 | 2% |
| (101 vessels) | Trip costs | 26,975,826 | -3% |
| | Fixed costs | 38,308,008 | -25% |
| | Net crew income | 93,835,212 | 4% |
| | Profits (Crew income increase) | 62,934,936 | 33% |
| | Profits (Crew income same) | 66,704,862 | 41% |
| Fishing Power + 9% Mortality adjustment | Scallop revenue | 217,845,953 | 0% |
| (101 vessels) | Trip costs | 26,262,118 | -6% |
| | Fixed costs | 38,308,008 | -25% |
| | Net crew income | 91,949,859 | 2% |
| | Profits (Crew income increase) | 60,756,311 | 28% |
| | Profits (Crew income same) | 62,640,884 | 32% |

### 5.4.3.7 Other Scenarios with stacking/leasing

Both scenarios presented above assumed that open area DAS and access area trips are stacked on more powerful vessels with a higher LPUE. There is no question that some vessel owners might transfer DAS and trips on a vessel with a similar size, not incurring any adjustment for fishing power differential. Such transfers would still be subject to a mortality adjustment, however. Without a mortality adjustment, the landings could still increase if the transferred open area DAS are fished using a newer vessel with a better crew even if that vessel has the same HP and length characteristics. In addition, the increased flexibility would allow the vessel owner or the captain to use the combined days more efficiently by adjusting the trip duration and saving on the steam time as discussed in Section 5.4.3.3.3.1 above. Therefore, for DAS transfers among the vessels in the same fishing power groups, the reduction in total DAS-used and the savings in trip expenses would be smaller. As a result, the producer surplus and overall economic benefits would increase less. The impacts on profits from stacking are still expected to be positive due to the savings in fixed costs.

Yet, a less likely scenario is a transfer of DAS or permits from larger boats to less efficient vessels. Permit stacking from a more powerful vessel to a smaller vessel would probably not increase profits in the same extent because there would be no increase in the number DAS to compensate for the reduced efficiency, i.e., LPUE, of the smaller/older vessel. Thus, fishing the same number of days on a less efficient boat would lower the landings and revenues of the owner who stacked the permits on the smaller vessel. In addition, if all transfers of DAS are subject to a mortality adjustment, total DAS-used could decline reducing landings further. On the other hand, the transfers of this nature could still be profitable if the savings in fixed costs and trip expenses outweigh the loss in revenues due to the decline in landings and revenues.

### 5.4.3.8 Economic Impacts of Leasing (Alternative 3.3.3)

Although the results of the analyses are discussed in terms of permit stacking, similar conclusions would be valid for the impacts of leasing alternatives, including the fishing power and mortality adjustment with some qualifications. In the case of leasing, the saving in the fixed costs would be lower than compared with stacking options, but leasing will provide some additional flexibility to some vessels with positive economic impacts as summarized below:

- Leasing alternatives would allow a vessel to lease part or all of its open area DAS allocation on an annual basis and lease any number of its access area trip allocations. Compared to leasing of a full permit, this option is more flexible because it allows smaller units of access to be leased compared to a full permit. Some individuals may only want to lease some access in order to make a full year, i.e. 20 DAS compared to a full DAS allocation and access area trips. This option may accommodate more individuals as business plans change during the year and/or equipment fails.

- The overall economic impacts of open area DAS and access area trip leasing will depend on how many vessels will resort to *leasing* rather than permit stacking, and on the extent of leasing, i.e., number of days or access area trips leased as well as on the cost of leasing. Leasing will provide flexibility for vessels to lease access area trips and open area DAS for an optimal level of operation and larger profits. Leasing of open area DAS or access area trips would take place in so far as it increases profits for the trading vessels after the costs of leasing are taken into account. A vessel would lease DAS or trips to another vessel only if the expected gain from leasing, that is, the value of lease exceeds the revenue it could obtain by fishing DAS itself net of trip, labor, and fixed costs. Similarly, a vessel would lease DAS or trips from another only if the expected revenue net of costs exceeds the value of the lease. For these reasons, leasing alternatives will provide an opportunity for the marginally efficient vessels to lease their allocations to more efficient vessels to maximize joint economic returns.

- As in the case of permit stacking, the fishing power and mortality adjustments are expected to prevent a vessel from increasing scallop landings by leasing DAS from another vessel. Thus, the scallop revenues that could be obtained from fishing with the leased days are estimated to be equal to the revenues that the lessor could derive from fishing these days. The same argument is valid for leasing the access area trips since the lessee will not be allowed to land any amount larger than the allocated scallop pounds and/or possession limit. Therefore, leasing could lead to an increase in profits of both lessor and the lessee if the open area days or access area trips could be fished at lower costs on some vessels relative to others. The relative variable (trip) costs of fishing will depend, in turn, on the relative LPUE's and costs of the trading vessels. An example with the open area DAS leasing is provided in Appendix III. The results showed that as long as a vessel leases DAS from a vessel that is either in the same or in a lower HP-length group, the boat share of fishing the open area DAS allocation (51 days in this case) on the leasing vessel will exceed the boat share of the lessor. This surplus will provide opportunity for the lessee to compensate lessor for the amount it could earn by fishing the pounds on her/his own boat and still earn a profit. This analysis does not include any savings in the fixed costs for the lessor or an increase in the fixed costs for the lessee, however. Leasing would also reduce the fixed costs of the lessee, including the expenses for maintenance, repairs, liability insurance and other operating costs. The savings in fixed costs will not be as large as in the case of permit stacking since the vessel that leased its days or trips will still be maintained and incur some insurance costs. According to the estimates provided by some Scallop Industry members, keeping a vessel at the dock would cost about $25,000 a year even if that vessel is not used for fishing at all. This is still lower than average fixed costs over $188,000 (excluding the improvement costs) for the scallop vessels in 2007 (Appendix I to Framework 21).

- Since the costs of leasing will be lower than buying a permit for stacking, some fishermen, especially single boat owners, may be able to benefit from such an option. In this respect, it would be useful to distinguish leasing, i.e., transferring DAS or trips, from one vessel to another of a multi-boat owner that will not incur a cash payment for this transfer from leasing by single-boat owners who would be required to pay for the lease. Leasing would allow two single boat owners to get together and combine and fish their allocations on one boat saving some fixed expenses on the other. As a result, these two vessels may be able to increase their overall profits depending on the differences in LPUE and their relative trip and fixed costs. This could be done through leasing either with payment in cash or perhaps with a sharing arrangement of the catch.

- In the case of access area trips, the entire trip and associated possession limit for that trip would have to be leased as one unit. Leasing of access area trips could occur between permit types and gear types with certain restrictions. A vessel would not be permitted to combine access area trips, however. This will lower economic benefits since the vessels will not be able to save on the steaming time by combining trips. This alternative would not need a fishing power adjustment clause because access area trips are managed with a possession limit. There will be savings in trip costs, however, if access area trips are stacked on more efficient boats with more experienced crew.

#### 5.4.3.9 Potential impacts of stacking on shoreside businesses and overall economy in the Northeast

The measures under consideration to address excess capacity in the limited access fishery and provide more flexibility for efficient use of the scallop resource include alternatives for permit stacking and leasing. Both types of programs are expected to cause some level of consolidation in the fleet. Consolidation had different impacts on the social environment that are described above. In addition, consolidation does generally reduce costs and increase profits for some sectors of the industry, primarily vessel owners. There are ways to assess the potential impacts of consolidation on the regional economy overall, including the impacts on fewer industry based jobs compared to increases in other sectors of the economy that benefit from increased profits. This section describes an analysis that was conducted to describe the potential impacts on shoreside businesses and the overall economy in the Northeast as a result of consolidation.

A regional input-output model was used with various data about the scallop fishery. This model estimates the types of businesses that will be positively/negatively impacted and the magnitude of the impact (sales, income, and employment). An input/output model captures the inter-industry transactions between businesses and final consumers in the economy. The trickle down effects are captured until all expenditures are outside the local economy (Maine to North Carolina).

A well established modeling approach called regional input-output analysis was used to measure the economic contribution of the full-time limited access scallop dredge harvesting sector to the Northeast regional economy (Maine through North Carolina) under different permit stacking scenarios. The economic contribution of scallop harvesting to the overall regional economy extends well beyond simply measuring the income, employment and ex-vessel revenues of harvesting activities. In addition to these direct effects, indirect effects to the regional economy are generated through linkages to non-fisheries sectors. For example, scallopers purchase goods and services to maintain and operate their vessels. Businesses providing these goods and services must also purchase inputs from their suppliers in order to conduct these transactions. In turn, these suppliers then purchase goods and services from their own suppliers, triggering a whole series of additional indirect multiplier effects. This cascading series of industry-to-industry, backward-linked multiplier effects and the cycle of consumption spending induced by all the incomes generated in these economic activities, contributes to the economy's employment and income base and continues until all of the multiplier effects are derived from outside the local economy. The summation of the direct, indirect, and induced multiplier effects that remain within the local economy represent the total economic contributions or impact of a particular industry sector to the overall regional economy.

In the assessment provided here, a ready-made regional input-output system called IMPLAN Pro (Minnesota IMPLAN Group, Inc) was employed to predict the contribution of the full-time limited access scallop fleet, under different stacking scenarios, to the overall regional economy in the Northeast. The resulting total estimated sales, personal income and employment contributions are differentiated by (1) the direct contributions attributed to harvesting, (2) the values attributed to the fleets' operating expenditures, and (3) the values originating from income expenditures by vessel owners, captains, and crew. It is desirable to show separation of the impact contributions in this manner in order to highlight the differing results across stacking scenarios.

The analysis compares the contribution of the full-time limited access scallop fleet in 2007 (status quo) to four hypothetical stacking scenarios. Scenario 1 assumes that all full-time limited access scallop dredge permit holders stack permits resulting in a decline in the fleet from 252 vessels to 126. After stacking, total fixed costs are assumed to decline by 24% and total trip costs by 6%. Scenario 2 assumes that only multi-boat owners stack permits. The PDT has estimated that 202 of the 252 full-time limited access scallop dredge permits were held by multi-boat owners in 2007 so the multi-boat owner fleet is assumed to decline to 101 vessels in scenario 2. The single owner fleet is assumed to remain constant at 50 vessels so the total number of boats modeled in scenario 2 was 151. Total fixed and trip costs are assumed to decline by 21% and 5%, respectively, for the boats that stack permits. All costs are assumed to remain constant for the vessels that do not stack permits. Scenario 3 assumes that 25% of all vessels stack permits resulting in a fleet size of 189 boats. Total fixed costs are estimated to decline by 12% and trip costs by 3% under this scenario. Costs for vessels that do not stack permits are assumed to remain the same. Lastly, scenario 4 assumes that 25% of multi-boat owners stack permits resulting in a decline in the fleet from 252 vessels to 202. Overall fixed costs are projected to decline by 10% and trip costs by 2.4%. These four scenarios are the same ones that were analyzed in the economic impact section of this amendment.

The analysis is based on full-time limited access scallop dredge permit holders (category 2) that landed scallops in 2007 (Table 121). According to the Northeast dealer, permit, logbook and weighout data there were 252 category 2 permit holders with scallop landings in 2007. These vessels landed 42.867 million pounds of scallops valued at $269.3 million (about 73% of total scallop value). On trips where scallops were landed, an additional $3.566 million in revenues were earned from other species (primarily monkfish) for a total ex-vessel value of $272.897 million in 2007 from all species landed on scallop trips by category 2 permit holders.

***Data***

The input data is important and several different sources were used. The inputs being used include cost and earnings information from fishery stakeholders, which is very difficult to obtain. Vessel cost and earnings data used in the assessment were derived from cost models estimated by the PDT, trip cost data collected by NMFS Northeast Observer Program and fixed cost data collected from an annual NMFS' voluntary survey provided to owners when applying for a fishing permit.

A production function was developed from these data that shows the average estimated proportions of commodities, services, labor payments and income associated with one dollar of output (i.e., ex-vessel revenue) for the 252 vessels included in the analysis. The proportions were then multiplied by total gross revenues earned by the fleet ($272.897 million) and entered into the model to determine impacts under the status quo scenario (prior to stacking). All these input data are described in Table 122.

Several assumptions were made prior to running the model. These assumptions were developed by the PDT with input from the Scallop Advisory Panel. The Advisory panel reviewed the final assumptions and results and agreed that the assumptions are reasonable and likely close to fleet averages. The key assumptions of the model include: 1) how much specific trip and fixed costs are expected to decline after stacking; 2) how many crew members currently fish more than one permit to evaluate the number of crew loss as a result of stacking; and 3) how much would it cost to leave a vessel tied to the dock if all scallop effort was leased to another vessel. The last assumption was not integrated into the IMPLAN model results because all vessels that transferred scallop permits to another vessel were assumed to be scraped, but if a vessel decided to lease instead of stack, or stack but keep the vessel tied up, those cost savings of scraping the vessel would not be realized. The scallop advisors suggest that it costs about 25,000 dollars a year to keep a vessel tied to the dock including dock fees, hull insurance, electrical for generators, etc.

As for the first set of assumptions related to how much costs are expected to decline after stacking, the major assumptions made were related to insurance costs declining 25% when two permits are stacked, maintenance and repair costs would decline 25%, and vessel improvements would decline 50%. The industry advisors agreed with these assumptions overall, and suggested that maintenance and repair costs may even reduce 50%, and vessel improvements may only decline 33% because the one vessel will run through equipment faster. The last assumption that greatly affects the results of this analysis is the assumption about the number of crew that currently fish more than one permit. If too few crew are assumed to fish more than one permit then the expected job loss from stacking will be exaggerated, and if too many are assumed to fish on multiple vessels, then impacts will be underestimated. The assumption used for this analysis is that ¾ of all crew and captains currently fish more than one permit. The scallop advisors reported that on average this assumption is probably close to reality when all ports and businesses are combined. Several responded that 2/3rd is what their businesses do, several others have 100% of crew on more than one permit, and a few reported that some vessels still have dedicated crews that do not fish more than one permit.

Thus, 189 of the 252 full-time scallop dredge vessels in the analysis were assumed to share crew. The PDT has estimated that the average number of crew per trip is 6.75 for each scallop dredge vessel so the total number of unique crew members on vessels that share crew was assumed to be 638 (189/2 * 6.75). The remaining 63 boats that do not share crew were estimated to employ 425 crew members (63 * 6.75) for a total of 1,063 unique crew members. For the first stacking scenario (all owners stack), the total number of unique crew is assumed to decline by approximately 20% to 851. The number of vessels that share crew declines to 94.5 (189/2), but since these vessels were already sharing crew it is assumed that there will be no change in the number of unique crew that are employed on these vessels (638 crew). The number of boats that do not share crew declines to 31.5 (63/2) and the crew employed on these vessels therefore declines to 213 (425/2). The total number of unique crew in the second scenario (only multi-boat owners stack) is assumed to decline by about 16% to 893. Assuming ¾ of the multi-boat owners share crew, they employ 511 unique crew members ((202*.75)/2 * 6.75) whom will be unaffected by stacking. The remaining ¼ of the multi-boat owners that do not share crew employ 341 crew (50.5 * 6.75) and after stacking these jobs are assumed to decline to 171. Since the number of crew employed on single-owner boats remains unchanged total crew jobs decline to 893 (1,063 – 171) under scenario 2. Under the third stacking scenario (25% of all vessels stack), crew jobs are estimated to decline by 10% to 957. The number of crew jobs associated with 25% of the vessels that do not share crew is 106 (63 * .25 * 6.75). The number of crew jobs associated with 25% of the vessels that share crew is 319 (189 * .25 * 6.75), but crew jobs aboard vessels that share crew are assumed to be unaffected by stacking. Thus, total crew jobs are estimated to decline by 106 to 957 unique crew jobs. The last scenario (25% of multi-boat owners stack) assumes that total crew jobs will decline by 8% to 978 jobs. As indicated under scenario 2, multi-boat owners that do not share crew are assumed to employ 341 unique crew members. If 25% of these boats stack then employment falls by 85 crew members (341 * .25). Multi-boat owners that share crew are unaffected under this scenario so total employment declines from 1,063 to 978.

***Results***

In addition to status quo (no stacking permitted) four scenarios were run: 1) everyone stacks; 2) only multi-boat owners stack; 25% of all vessels stack; and 3) 25% of multi-boat owners stack. The percent of total gross revenue for each share and specific cost for a vessel for all scenarios is summarized in Table 123 to Table 127. The input-output results are compared in Table 128. And the changes in employment for these scenarios are described in Table 129.

The full-time limited access scallop dredge fleet contributed $566.5 million in total sales to businesses located in the Northeast regional economy in 2007, $271.1 million in personal income (wages, salaries and benefits) and supported approximately 3,129 jobs (both full and part-time) (Table 129). Scenario 1 (all owners stack) resulted in $558.0 million in total sales generated to Northeast region businesses, $284.0 million on personal income and 2,878 total jobs supported by the fishery (a decline of 252 jobs). Scenario 2 conditions (multi-boat owners stack) resulted in $559.7 million in total sales, $279.7 million in personal income and 2,930 jobs (a decline of 198 jobs). Scenario 3 conditions (25% of all vessels stack) resulted in $560.5 million in total sales, $276.6 million in personal income and 2,991 jobs (a decline of 138 jobs). Lastly, scenario 4 conditions (25% of multi-boat owners stack) resulted in $563.7 million in total sales, $276.4 million in personal income and 3,032 jobs (a decline of 98 jobs).

For the most part, the jobs that are expected to be lost are related to scallop harvesting (crew) and manufacturing (boat yards). New jobs that are created, as a result of higher overall income levels in the economy under all four scenarios, will be in the finance, insurance and real estate fields as well as general services like hospitals and hotels (Table 129).

**Table 121 – Summary of input data about the scallop fishery used from 2007**

| | |
|---|---|
| **Input-Output Model Landings and Revenue Data** | |
| **Scallop-Lim AC-Full Time Category 2 Permit Holders, excludes small dredge** | |
| | 2007 |
| Number of full-time limited access scallop dredge permit holders | 255 |
| Number of full-time limited access scallop dredge permit holders with landings | 252 |
| Scallop Value ($'s) | 269,330,845 |
| Avg. Value per boat($'s) | 1,068,773 |
| Scallop Landings (lbs) | 42,867,103 |
| Avg. Scallop Landings per boat (lbs) | 170,108 |
| Avg. price/lb ($'s) | 6.28 |
| Other value ($'s) | 3,566,194 |
| Avg. Other value per boat ($'s) | 14,152 |
| Total value ($'s) | 272,897,039 |
| Avg. Total value per boat ($'s) | 1,082,925 |

**Table 122 - Status Quo Input-Output Model Cost Data**

| | | | | | |
|---|---|---|---|---|---|
| Shares from Cost Models | | | | Status Quo Production Function | |
| % of Gross | | Shares from observer data | | Used in Analysis | |
| net crew share | 0.35 | trip costs | | owner's net share | 0.2200 |
| trip costs | 0.14 | fuel | 0.76 | net crew share | 0.3500 |
| overhead & loans | 0.14 | oil | 0.03 | captain bonus | 0.0500 |
| repair/maintenance | 0.10 | ice | 0.05 | non crew labor | 0.0028 |
| owner's net share | 0.22 | food | 0.11 | fuel | 0.1064 |
| captain bonus | 0.05 | supplies | 0.05 | oil | 0.0042 |
| | 1 | water | 0 | ice | 0.0070 |
| | | | 1 | food | 0.0154 |
| | | Shares from Fixed Cost Survey | | supplies | 0.0070 |
| | | overhead & loans | | water | 0.0000 |
| | | permit fees | 0.01 | permit fees | 0.0014 |
| | | taxes | 0.09 | taxes | 0.0128 |
| | | lease | 0 | lease | 0.0000 |
| | | haulout | 0.13 | haulout | 0.0185 |
| | | mooring | 0.03 | mooring | 0.0043 |
| | | vehicle | 0.05 | vehicle | 0.0071 |
| | | travel | 0.02 | travel | 0.0028 |
| | | professional fees | 0.02 | professional fees | 0.0028 |
| | | association fees | 0.01 | association fees | 0.0014 |
| | | insurance | 0.4 | insurance | 0.0569 |
| | | communications | 0.03 | communications | 0.0043 |
| | | crew benefits (insurance) | 0.03 | crew benefits (insurance) | 0.0043 |
| | | non crew labor | 0.02 | principal & interest on loans | 0.0213 |
| | | principal & interest on loans | 0.15 | office | 0.0014 |
| | | office | 0.01 | repairs | 0.0508 |
| | | | 1 | improvements | 0.0469 |
| | | repairs/maintenance | | | 1 |
| | | repairs | 0.52 | | |
| | | improvements | 0.48 | | |
| | | | 1 | | |

**Table 123 – Status quo totals for implan model**

| | | | |
|---|---|---|---|
| Number of 2007 category 2 permit holders with landings | | 252 | |
| Total 2007 ex-vessel revenue from trips where scallops were landed | | 272,897,039 | |
| Total average ex-vessel revenue per boat | | 1,082,925 | |
| | | Status Quo | Status Quo |
| | % of total gross revenue | Avg. per boat | Fleet Total |
| owner's net share | 0.22 | 238,243 | 60,037,349 |
| net crew share | 0.35 | 379,024 | 95,513,964 |
| captain bonus | 0.05 | 54,146 | 13,644,852 |
| non crew labor | 0.0028 | 3,080 | 776,250 |
| fuel | 0.1064 | 115,223 | 29,036,245 |
| oil | 0.0042 | 4,548 | 1,146,168 |
| ice | 0.0070 | 7,580 | 1,910,279 |
| food | 0.0154 | 16,677 | 4,202,614 |
| supplies | 0.0070 | 7,580 | 1,910,279 |
| water | 0.0000 | 0 | 0 |
| permit fees | 0.0014 | 1,540 | 388,125 |
| taxes | 0.0128 | 13,862 | 3,493,126 |
| lease | 0.0000 | 0 | 0 |
| haulout | 0.0185 | 20,022 | 5,045,626 |
| mooring | 0.0043 | 4,621 | 1,164,375 |
| vehicle | 0.0071 | 7,701 | 1,940,625 |
| travel | 0.0028 | 3,080 | 776,250 |
| professional fees | 0.0028 | 3,080 | 776,250 |
| association fees | 0.0014 | 1,540 | 388,125 |
| insurance | 0.0569 | 61,607 | 15,525,003 |
| communications | 0.0043 | 4,621 | 1,164,375 |
| crew benefits (insurance) | 0.0043 | 4,621 | 1,164,375 |
| interest on loans | 0.0087 | 9,421 | 2,374,204 |
| principal payments | 0.0126 | 13,681 | 3,447,672 |
| office | 0.0014 | 1,540 | 388,125 |
| repairs | 0.0508 | 55,060 | 13,875,046 |
| improvements | 0.0469 | 50,824 | 12,807,735 |
| | 1 | 1,082,925 | 272,897,039 |

**Table 124 – Scenario 1 totals for implan model**
*Fleet size declines from 252 vessels to 126*
*Total fixed costs assumed to decline by 24%*
*Total trip costs assumed to decline by 6%*

| | | All owners stack (single and multi-boat owners) | | |
|---|---|---|---|---|
| Number of 2007 permit holders with landings | | 126 | | |
| Total 2007 ex-vessel revenue from trips where scallops were landed | | 272,897,039 | | |
| Total average ex-vessel revenue per boat | | 2,165,850 | | |
| | | | Avg. per boat | Fleet Total |
| owner's net share | | 0.2830 | 612,935 | 77,229,862 |
| net crew share | | 0.3500 | 758,047 | 95,513,964 |
| captain bonus | | 0.0500 | 108,292 | 13,644,852 |
| non crew labor | | 0.0028 | 6,161 | 776,250 |
| **fuel** | | 0.1001 | 216,850 | 27,323,106 |
| **oil** | | 0.0040 | 8,560 | 1,078,544 |
| **ice** | Trip costs assumed to decline | 0.0066 | 14,266 | 1,797,573 |
| **food** | | 0.0145 | 31,386 | 3,954,660 |
| **supplies** | | 0.0066 | 14,266 | 1,797,573 |
| **permit fees** | | 0.0011 | 2,289 | 288,368 |
| **taxes** | | 0.0095 | 20,598 | 2,595,314 |
| **haulout** | | 0.0137 | 29,752 | 3,748,787 |
| **mooring** | | 0.0032 | 6,866 | 865,105 |
| **insurance** | Fixed costs assumed to decline | 0.0423 | 91,545 | 11,534,728 |
| **interest on loans** | | 0.0065 | 14,017 | 1,766,111 |
| **principal payments** | | 0.0094 | 20,313 | 2,559,412 |
| **repairs** | | 0.0378 | 81,816 | 10,308,847 |
| **improvements** | | 0.0349 | 75,523 | 9,515,858 |
| vehicle | | 0.0071 | 15,402 | 1,940,625 |
| travel | | 0.0028 | 6,161 | 776,250 |
| professional fees | | 0.0028 | 6,161 | 776,250 |
| association fees | | 0.0014 | 3,080 | 388,125 |
| communications | | 0.0043 | 9,241 | 1,164,375 |
| crew benefits (insurance) | | 0.0043 | 9,241 | 1,164,375 |
| office | | 0.0014 | 3,080 | 388,125 |
| | | 1 | 2,165,850 | 272,897,039 |

**Table 125 – Scenario 2 totals for implan model**

*Fleet size declines from 252 vessels to 151*

*- Multi-boat owner fleet assumed to decline from 202 to 101 vessels*

*- No change in single owner boats remains at 50 vessels*

*Total fixed costs assumed to decline by 21% for stacked vessels*

*Total trip costs assumed to decline by 5% for stacked vessels*

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Multi-boat owner fleet declines to 101 | | | Single owner fleet remains at 50 vessels | | |
| Number of 2007 permit holders with landings | | 101 | | | 50 | | |
| Total 2007 ex-vessel revenue from trips where scallops were landed | | 218,750,801 | | | 54,146,238 | | |
| Total average ex-vessel revenue per boat | | 2,165,850 | | | 1,082,925 | | |
| | | | Avg. per boat | Fleet Total | | Avg. per boat | Fleet Total |
| owner's net share | | 0.2737 | 592,858 | 59,878,657 | 0.2200 | 238,243 | 11,912,172 |
| net crew share | | 0.3500 | 758,047 | 76,562,780 | 0.3500 | 379,024 | 18,951,183 |
| captain bonus | | 0.0500 | 108,292 | 10,937,540 | 0.0500 | 54,146 | 2,707,312 |
| non crew labor | | 0.0028 | 6,161 | 622,232 | 0.0028 | 3,080 | 154,018 |
| **fuel** | | 0.1014 | 219,615 | 22,181,156 | 0.1064 | 115,223 | 5,761,160 |
| **oil** | | 0.0040 | 8,669 | 875,572 | 0.0042 | 4,548 | 227,414 |
| **ice** | **Trip costs assumed to decline** | 0.0067 | 14,448 | 1,459,287 | 0.0070 | 7,580 | 379,024 |
| **food** | | 0.0147 | 31,786 | 3,210,431 | 0.0154 | 16,677 | 833,852 |
| **supplies** | | 0.0067 | 14,448 | 1,459,287 | 0.0070 | 7,580 | 379,024 |
| **permit fees** | | 0.0011 | 2,398 | 242,240 | 0.0014 | 1,540 | 77,009 |
| **taxes** | | 0.0100 | 21,586 | 2,180,157 | 0.0128 | 13,862 | 693,081 |
| **haulout** | | 0.0144 | 31,179 | 3,149,116 | 0.0185 | 20,022 | 1,001,116 |
| **mooring** | | 0.0033 | 7,195 | 726,719 | 0.0043 | 4,621 | 231,027 |
| **insurance** | **Fixed costs assumed to decline** | 0.0443 | 95,937 | 9,689,588 | 0.0569 | 61,607 | 3,080,358 |
| **interest on loans** | | 0.0068 | 14,689 | 1,483,597 | 0.0087 | 9,421 | 471,072 |
| **principal payments** | | 0.0098 | 21,287 | 2,149,999 | 0.0126 | 13,681 | 684,062 |
| **repairs** | | 0.0396 | 85,741 | 8,659,804 | 0.0508 | 55,060 | 2,752,985 |
| **improvements** | | 0.0365 | 79,145 | 7,993,665 | 0.0469 | 50,824 | |
| vehicle | | 0.0071 | 15,402 | 1,555,581 | 0.0071 | 7,701 | 385,045 |
| travel | | 0.0028 | 6,161 | 622,232 | 0.0028 | 3,080 | 154,018 |
| professional fees | | 0.0028 | 6,161 | 622,232 | 0.0028 | 3,080 | 154,018 |
| association fees | | 0.0014 | 3,080 | 311,116 | 0.0014 | 1,540 | 77,009 |
| communications | | 0.0043 | 9,241 | 933,348 | 0.0043 | 4,621 | 231,027 |
| crew benefits (insurance) | | 0.0043 | 9,241 | 933,348 | 0.0043 | 4,621 | 231,027 |
| office | | 0.0014 | 3,080 | 311,116 | 0.0014 | 1,540 | 77,009 |
| | | 1 | 2,165,850 | 218,750,801 | 1 | 1,082,925 | 51,605,021 |

**Table 126 – Scenario 3 totals for implan model**
*Fleet size declines from 252 vessels to 189*
*Total fixed costs assumed to decline by 12% for stacked vessels*
*Total trip costs assumed to decline by 3% for stacked vessels*

| | | | | |
|---|---|---|---|---|
| | | 25% of all owners stack (single and multi-boat owners) | | |
| Number of 2007 permit holders with landings | | 189 | | |
| Total 2007 ex-vessel revenue from trips where scallops were landed | | $272,897,039 | | |
| Total average ex-vessel revenue per boat | | $1,443,900 | | |
| | | | Avg. per boat | Fleet Total |
| owner's net share | | 0.2518 | 363,574 | $68,715,474 |
| net crew share | | 0.3500 | 505,365 | $95,513,964 |
| captain bonus | | 0.0500 | 72,195 | $13,644,852 |
| non crew labor | | 0.0028 | 4,107 | $776,250 |
| **fuel** | | 0.1032 | 149,022 | $28,165,158 |
| **oil** | | 0.0041 | 5,882 | $1,111,783 |
| **ice** | Trip costs assumed to decline | 0.0068 | 9,804 | $1,852,971 |
| **food** | | 0.0149 | 21,569 | $4,076,536 |
| **supplies** | | 0.0068 | 9,804 | $1,852,971 |
| **permit fees** | | 0.0012 | 1,787 | $337,827 |
| **taxes** | | 0.0111 | 16,087 | $3,040,447 |
| **haulout** | | 0.0161 | 23,237 | $4,391,757 |
| **mooring** | | 0.0037 | 5,362 | $1,013,482 |
| **insurance** | Fixed costs assumed to decline | 0.0495 | 71,498 | 13,513,100 |
| **interest on loans** | | 0.0076 | 10,947 | 2,069,024 |
| **principal payments** | | 0.0110 | 15,864 | $2,998,388 |
| **repairs** | | 0.0443 | 63,899 | $12,076,962 |
| **improvements** | | 0.0409 | 58,984 | $11,147,965 |
| vehicle | | 0.0071 | 10,268 | $1,940,625 |
| travel | | 0.0028 | 4,107 | $776,250 |
| professional fees | | 0.0028 | 4,107 | $776,250 |
| association fees | | 0.0014 | 2,054 | $388,125 |
| communications | | 0.0043 | 6,161 | $1,164,375 |
| crew benefits (insurance) | | 0.0043 | 6,161 | 1,164,375 |
| office | | 0.0014 | 2,054 | $388,125 |
| | | 1 | 1,443,900 | $272,897,039 |

**Table 127 – Scenario 4 totals for implan model**

*Fleet size declines from 252 vessels to 202*

*- Multi-boat owner fleet assumed to decline from 202 to 152 vessels*

*- No change in single owner boats remains at 50 vessels*

*Total fixed costs assumed to decline by 10% for stacked vessels*

*Total trip costs assumed to decline by 2.4% for stacked vessels*

| | | Multi-boat owner fleet declines to 152 | | | Single owner fleet remains at 50 vessels | | |
|---|---|---|---|---|---|---|---|
| Number of 2007 permit holders with landings | | 152 | | | 50 | | |
| Total 2007 ex-vessel revenue from trips where scallops were landed | | 218,750,801 | | | 54,146,238 | | |
| Total average ex-vessel revenue per boat | | 1,439,150 | | | 1,082,925 | | |
| | | | Avg. per boat | Fleet Total | | Avg. per boat | Fleet Total |
| owner's net share | | 0.2510 | 361,169 | 54,897,701 | 0.2200 | 238,243 | 11,912,172 |
| net crew share | | 0.3500 | 503,703 | 76,562,780 | 0.3500 | 379,024 | 18,951,183 |
| captain bonus | | 0.0500 | 71,958 | 10,937,540 | 0.0500 | 54,146 | 2,707,312 |
| non crew labor | | 0.0028 | 4,094 | 622,232 | 0.0028 | 3,080 | 154,018 |
| **fuel** | **Trip costs assumed to decline** | 0.1038 | 149,451 | 22,716,483 | 0.1064 | 115,223 | 5,761,160 |
| **oil** | | 0.0041 | 5,899 | 896,703 | 0.0042 | 4,548 | 227,414 |
| **ice** | | 0.0068 | 9,832 | 1,494,505 | 0.0070 | 7,580 | 379,024 |
| **food** | | 0.0150 | 21,631 | 3,287,912 | 0.0154 | 16,677 | 833,852 |
| **supplies** | | 0.0068 | 9,832 | 1,494,505 | 0.0070 | 7,580 | 379,024 |
| **permit fees** | **Fixed costs assumed to decline** | 0.0012 | 1,782 | 270,798 | 0.0014 | 1,540 | 77,009 |
| **taxes** | | 0.0111 | 16,034 | 2,437,184 | 0.0128 | 13,862 | 693,081 |
| **haulout** | | 0.0161 | 23,160 | 3,520,377 | 0.0185 | 20,022 | 1,001,116 |
| **mooring** | | 0.0037 | 5,345 | 812,395 | 0.0043 | 4,621 | 231,027 |
| **insurance** | | 0.0495 | 71,263 | 10,831,929 | 0.0569 | 61,607 | 3,080,358 |
| **interest on loans** | | 0.0076 | 10,911 | 1,658,504 | 0.0087 | 9,421 | 471,072 |
| **principal payments** | | 0.0110 | 15,812 | 2,403,470 | 0.0126 | 13,681 | 684,062 |
| **repairs** | | 0.0443 | 63,689 | 9,680,740 | 0.0508 | 55,060 | 2,752,985 |
| **improvements** | | 0.0409 | 58,790 | 8,936,067 | 0.0469 | 50,824 | 2,541,217 |
| vehicle | | 0.0071 | 10,234 | 1,555,581 | 0.0071 | 7,701 | 385,045 |
| travel | | 0.0028 | 4,094 | 622,232 | 0.0028 | 3,080 | 154,018 |
| professional fees | | 0.0028 | 4,094 | 622,232 | 0.0028 | 3,080 | 154,018 |
| association fees | | 0.0014 | 2,047 | 311,116 | 0.0014 | 1,540 | 77,009 |
| communications | | 0.0043 | 6,140 | 933,348 | 0.0043 | 4,621 | 231,027 |
| crew benefits (insurance) | | 0.0043 | 6,140 | 933,348 | 0.0043 | 4,621 | 231,027 |
| office | | 0.0014 | 2,047 | 311,116 | 0.0014 | 1,540 | 77,009 |
| | | 1 | 1,439,150 | 218,750,801 | 1 | 1,082,925 | 54,146,238 |

**Table 128 – Input Output model results**

**Status quo (252 boats)**

| | Operating Structure ($'s) | Value to Northeast Region Economy Sales ($'s) | Income ($'s) | Jobs |
|---|---|---|---|---|
| Scallop harvesting | | 272,897,039 | 169,972,414 | 1,063 |
| Fleet operating expenditures | 102,924,625 | 124,126,291 | 45,032,434 | 806 |
| Income | | | | |
| Captains | 27,289,704 | 27,797,345 | 9,235,932 | 210 |
| Owners | 60,037,349 | 55,377,550 | 18,399,716 | 417 |
| Crew members | 81,869,112 | 85,275,993 | 28,102,145 | 625 |
| Non-crew labor | 776,250 | 1,044,504 | 346,206 | 8 |
| | 272,897,039 | 566,518,722 | 271,088,847 | 3,129 |

**Scenario 1 - all owners stack (126 boats remain)**

| | Operating Structure ($'s) | Value to Northeast Region Economy Sales ($'s) | Income ($'s) | Jobs |
|---|---|---|---|---|
| Scallop harvesting | | 272,897,039 | 187,164,928 | 851 |
| Fleet Operating Expenditures | 85,732,111 | 102,142,165 | 36,703,282 | 663 |
| Income | | | | |
| Captains | 27,289,704 | 27,264,649 | 8,363,507 | 190 |
| Owners | 77,229,862 | 71,235,672 | 23,668,726 | 537 |
| Crew members | 81,869,112 | 83,392,032 | 27,707,794 | 629 |
| Non-crew labor | 776,250 | 1,044,504 | 346,206 | 8 |
| | 272,897,039 | 557,976,061 | 283,954,443 | 2,878 |

**Scenario 2 - multi-boat owners stack (151 boats remain)**

| | Operating Structure ($'s) | Value to Northeast Region Economy Sales ($'s) | Income ($'s) | Jobs |
|---|---|---|---|---|
| Scallop harvesting | | 272,897,039 | 181,725,895 | 893 |
| Fleet operating expenditures | 91,171,144 | 109,066,614 | 39,319,160 | 708 |
| Income | | | | |
| Captains | 27,289,704 | 34,819,852 | 11,774,837 | 194 |
| Owners | 71,790,829 | 66,218,785 | 22,001,818 | 499 |
| Crew members | 81,869,112 | 97,695,920 | 32,957,759 | 628 |
| Non-crew labor | 776,250 | 1,044,503 | 346,205 | 8 |
| | 272,897,039 | 559,685,370 | 279,715,724 | 2,930 |

**Scenario 3 - 25% of all vessels stack (189 boats remain)**

| | Operating Structure ($'s) | Value to Northeast Region Economy Sales ($'s) | Income ($'s) | Jobs |
|---|---|---|---|---|
| Scallop harvesting | | 272,897,039 | 178,650,540 | 957 |
| Fleet operating expenditures | 94,246,499 | 112,481,522 | 40,475,145 | 730 |
| Income | | | | |
| Captains | 27,289,704 | 27,264,649 | 8,363,507 | 190 |
| Owners | 68,715,474 | 63,382,123 | 21,059,311 | 477 |
| Crew members | 81,869,112 | 83,392,035 | 27,707,794 | 629 |
| Non-crew labor | 776,250 | 1,044,503 | 346,206 | 7 |
| | 272,897,039 | 560,461,871 | 276,602,502 | 2,991 |

**Scenario 4 - 25% of multi-boat owners stack (202 boats remain)**

| | Operating Structure ($'s) | Value to Northeast Region Economy Sales ($'s) | Income ($'s) | Jobs |
|---|---|---|---|---|
| Scallop harvesting | | 272,897,039 | 176,744,939 | 977 |
| Fleet operating expenditures | 96,152,100 | 115,011,296 | 41,458,284 | 747 |
| Income | | | | |
| Captains | 27,289,704 | 27,797,345 | 9,235,932 | 210 |
| Owners | 66,809,873 | 61,624,426 | 20,475,299 | 464 |
| Crew members | 81,869,112 | 85,275,994 | 28,102,146 | 625 |
| Non-crew labor | 776,250 | 1,044,503 | 346,205 | 7 |
| | 272,897,039 | 563,650,603 | 276,362,804 | 3,031 |

**Table 129 – Employment contributions by industry type**

| | Status Quo | Scenario 1 All Stack | Scenario 2 Multi-Boat Owner Stack | Scenario 3 25% of All Boats Stack | Scenario 4 25% Multi-Boat Owner Stack |
|---|---|---|---|---|---|
| Scallop harvesting (crew) | 1,063 | -212 | -170 | -106 | -86 |
| Agriculture | 13 | 0 | 0 | 0 | 0 |
| Mining | 20 | -1 | -1 | -1 | 0 |
| Construction | 0 | 0 | 0 | 0 | 0 |
| Manufacturing | 907 | -57 | -41 | -37 | -15 |
| Transportation, communications and public utilities | 81 | -3 | -2 | -2 | -1 |
| Retail and wholesale trade | 87 | -1 | -1 | -1 | -1 |
| Finance, insurance and real estate | 92 | 9 | 7 | 4 | 3 |
| Services | 866 | 13 | 10 | 5 | 4 |
| | 3,129 | -252 | -198 | -138 | -98 |

### 5.4.4 Measures to adjust specific aspects of FMP to make overall program more effective

#### 5.4.4.1 Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation (Proposed Action)

The modified overfishing definition is designed to maximize scallop yield and increase flexibility for setting annual fishing mortality targets to meet area rotation objectives. Overall, two alternatives are considered in this section: the No Action (existing definition), and a hybrid alternative (uses the threshold from No Action and the target from Amendment 10). Under the no-action alternative, the OFD will remain the same, which spatially averages the fishing mortality estimate over the resource as a whole. The proposed action (hybrid alternative) has favorable characteristics like reducing potential impacts on bycatch and habitat by reducing area swept, increasing catch over the long-term with larger average scallop size and producing higher stock biomass. If these objectives are materialized, this measure could increase landings and revenues and reduce costs for the scallop fishery resulting in higher producer, consumer and net national benefits compared to the no action alternative over the long-term. Table 130 shows that during the first 10 years, the landings under No Action would exceed the landings with the Hybrid overfishing definition scenario, resulting the lower economic benefits for this period. Over the long-term (2020-2048) however, landings, revenues and total economic benefits are expected to be higher and fishing costs are expected to be lower if hybrid overfishing definition is used for the management of the scallop resource. The cumulative present value of the economic benefits with the hybrid overfishing definition would exceed the status quo benefits by 3.6%. The values of the revenues, producer and consumer surpluses and economic benefits are estimated using the price model described in Appendix III and by holding the price of imports and the value of the disposable income per capita constant. Although the change in the value of these factors would change the absolute value of ex-vessel prices, the relative percentage change in prices, revenues and benefits would not differ significantly as compared to the status quo option from the values presented in Table 130.

Although the change in overall landings is small with the hybrid overfishing definition, under the status quo scenario the vessels will have to spend more days fishing; 101.1 days versus 83.89 days for period 2020 – 2048. As a result, the fishing costs will be 17% lower over the long-term if the hybrid overfishing definition is applied to manage the scallop fishery. Total economic benefits for the hybrid alternative is slightly lower than total no action for 2010-2048 because the benefits occur over the long-term are discounted by 7% each year, which makes the short-term benefits count relatively more than the long-term benefits. In addition to these economic benefits, changing the overfishing definition would have significant positive habitat impacts by reducing the area swept as discussed in the Biological Impacts Section 5.1.

**Table 130. Economic Benefits of the Hybrid Overfishing Definition (Proposed Action) Compared with Status Quo (Dollar values are expressed in 2008 constant prices)**

| Period | Data | Scenarios | | |
|---|---|---|---|---|
| | | Hybrid | No Action | % Change from no action |
| 2010-2019 | Landings (mill.lb per year) | 56.74 | 61.67 | -8.0% |
| | Ex-vessel price ($ per pound) | 7.14 | 7.12 | 0.2% |
| | Fleet DAS (average per year) | 29168.70 | 33357.90 | -12.6% |
| | Average DAS per vessel | 81.50 | 93.21 | -12.6% |
| | Average annual scallop revenue for the fleet | 404.31 | 438.49 | -7.8% |
| | Average annual Trip Costs for the Fleet | 46.67 | 53.37 | -12.6% |
| | Cumulative present value of the producer surplus | 2671.05 | 2867.53 | -6.9% |
| | Cumulative present value of the consumer surplus | 140.26 | 151.70 | -7.5% |
| | Cumulative present value of the total benefits | 2811.32 | 3019.23 | -6.9% |
| 2020-2048 | Landings (mill.lb per year) | 59.28 | 58.57 | 1.2% |
| | Ex-vessel price ($ per pound) | 7.28 | 7.34 | -0.8% |
| | Fleet DAS (average per year) | 30024.62 | 36183.03 | -17.0% |
| | Average DAS per vessel | 83.89 | 101.10 | -17.0% |
| | Average annual scallop revenue for the fleet | 431.72 | 430.07 | 0.4% |
| | Average annual Trip Costs for the Fleet | 48.04 | 57.89 | -17.0% |
| | Cumulative present value of the producer surplus | 2575.98 | 2497.85 | 3.1% |
| | Cumulative present value of the consumer surplus | 120.49 | 106.12 | 13.5% |
| | Cumulative present value of the total benefits | 2696.47 | 2603.97 | 3.6% |
| 2010-2048 | Landings (mill.lb per year) | 58.63 | 59.36 | -1.2% |
| | Ex-vessel price ($ per pound) | 7.25 | 7.29 | -0.5% |
| | Fleet DAS (average per year) | 29805.15 | 35458.64 | -15.9% |
| | Average DAS per vessel | 83.28 | 99.08 | -15.9% |
| | Average annual scallop revenue for the fleet | 424.70 | 432.23 | -1.7% |
| | Average annual Trip Costs for the Fleet | 47.69 | 56.73 | -15.9% |
| | Cumulative present value of the producer surplus | 5247.03 | 5365.38 | -2.2% |
| | Cumulative present value of the consumer surplus | 260.75 | 257.81 | 1.1% |
| | Cumulative present value of the total benefits | 5507.79 | 5623.19 | -2.1% |

#### 5.4.4.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the limited entry program recently implemented for the general category fishery. Amendment 11 to the Scallop FMP limited access in the general category fishery and implemented an IFQ program for qualifying vessels. This action is currently considering alternatives to address the following specific issues: rollover of IFQ, consideration of a general category sector application, modification of the general category possession limit, and modification of the maximum quota restriction one vessel can harvest. No action would maintain that IFQ expires at the end of a fishing year. A permit owner would be prohibited from carrying forward any unused IFQ into the following fishing year and would have no economic impacts compared to the status quo program included in Amendment 11.

#### 5.4.4.2.1 Provision to allow rollover

The rollover option is expected to have positive economic impacts on the LAGC fishery, on overall scallop revenue, producer and consumer benefits compared to the no action scenario. Thus the impacts on total economic benefits will be positive although this impact would be small given that the scallop allocation for the general category fishery constitutes a small proportion, i.e., 5% of the total scallop landings. On the other hand, allowing IFQ rollover could increase management uncertainty for the following fishing year, increasing the likelihood of a larger buffer and potentially reducing the total quota allocated to the general category fishery.

##### 5.4.4.2.1.1 Allow IFQ rollover up to 15% (Proposed Action)

This measure will provide flexibility and as a safety mechanism for the general category IFQ owners in the case of bad weather/unforeseen circumstances at the end of the fishing year that prevent them from using their entire quota. As a result, this will give opportunity to vessels to land their unused quote in the next year with positive economic impacts on the LAGC fishery and on overall scallop revenue and profits. The proposed rollover option would have smaller positive economic impacts compared to the no action since the vessels that were not able to land more than 15% of their allocation will still have lower revenues and profits as compared to the full rollover option that would allow them to recover their losses completely in the next fishing year. Allowing IFQ rollover could increase management uncertainty for the following fishing year, increasing the likelihood of a larger buffer and potentially reducing the total quota allocated to the general category fishery. Limiting the rollover at 15% will reduce the risks associated with increased management uncertainty compared to a full rollover option.

#### 5.4.4.2.2 Modify the general category possession limit (Proposed Action)

The Council is considering a modification to the general category possession limit in response to requests from some of the industry that the current possession limit is not economically feasible. These alternatives are not expected to change the scallop landings, at least, not directly and not in a significant way. Therefore the scallop revenues are not expected to change. The proposed action would increase in the general category possession limit from 400 lb. to 600 lb. and is expected to reduce the fishing time, trip costs and increase profits for these vessels. As a result, total producer surplus and net economic benefits will increase. The results would depend on the costs per day and the steaming time.

The costs savings from the elimination of the possession limit would be larger than the proposed action and the alternative that would modify the possession limit up to 1,000 pounds. Thus, elimination of the possession limit would result in higher profits for the general category vessels. The producer surplus and net economic benefits for the scallop fishery will increase as well although the increase is expected to be small given that the scallop allocation for the general category fishery constitutes a small proportion, i.e., 5%, of the total scallop landings. This alternative would change the nature of the general category fishery, however, from a small scale fishery to a full-time operation like in the limited access fishery.

#### 5.4.4.2.3 Modify the maximum quota one general category vessel can fish (Proposed Action)

Another alternative would modify the ownership restrictions and would make them consistent with each other. There are currently two ownership restrictions in place: 1) a restriction on the maximum amount of quota an individual can own (5%); and 2) a restriction on the maximum amount of quota that can be harvested from one platform (2%). No Action alternative would maintain the current restriction of 2% maximum quota allocation on each general category vessel. The proposed action would change the 2% maximum quota per vessel restriction to 2.5% of the total general category allocation. Making the ownership restrictions consistent would provide more flexibility to vessels to adjust their harvest levels to changes in the scallop resource conditions and will have positive impacts on profits. On the other hand, consolidation of quota could have some negative impacts on some communities which would be addressed by the social impact analysis.

#### 5.4.4.2.4 Allow LAGC quota to be transferred from IFQ permits (Proposed Action)

Currently, LAGC vessels that want to permanently transfer quota have to purchase the LAGC permit as well as all the other permits a vessel has, which makes purchasing of LAGC IFQ very expensive. The proposed option will make movement of quota between fishermen easier and increases the likelihood that all quota will be harvested. It would allow fishermen to combine their allocations and to benefit from an economically viable operation when the allocations of individual vessels are too small to make scallop fishing profitable. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on revenues, producer and consumer surpluses and total economic benefits from the fishery. The alternative that would allow quota to move from LA vessels with IFQ to LAGC vessels, but not in the reverse direction, would have larger economic benefits for LAGC vessels. However this option was not chosen mostly due to concerns about difficultly monitoring mixed quota from the two categories since they are allocated quota from two separate pools.

#### 5.4.4.2.5 Implementation of Community Fishing Associations (CFAs)

Another alternative would establish a process for the creation of Community Fishery Associations (CFAs), non-profit organizations that are allowed to hold permits and/or quota on behalf of a defined community. These groups may be formed around a common homeport or landing port, and can include just fishermen or other members of the community.

The purpose of establishing this process is to allow greater opportunities for fishery participants to proactively engage in resource governance, provide greater flexibility for participants, to enable communities to thrive by establishing a community-driven plan, and to create outcomes that are more socially and economically beneficial for communities within the biological limitations of the fishery. These entities would also support qualified new entrants to the fishery.

The goals of establishing Community Fishing Associations are to:

- Mitigate the potentially negative economic and social impacts of current transitions to quota management in the LAGC fishery.

- Provide affordable local industry access to fisheries resources
- Provide opportunities for qualified new entrants to the fishery
- Preserve traditional fishing communities and necessary onshore infrastructure

The establishment of CFAs will have positive impacts on the participants by allowing fishermen to combine their allocations and to fish using fewer vessels in order to reduce fishing costs. This will provide an opportunity for fishermen to establish and benefit from an economically viable operation when the allocations of individual vessels are too small to make scallop fishing profitable. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on landings, revenues and producer and consumer benefits. There could be some indirect positive impacts if the associations identify ways to fish more efficiently, reduce bycatch, and prevent interactions with the protected species.

There is some concern that CFAs could change the nature of the general category fishery from a small day-boat fishery to a fishery dominated by a few large boats fishing like offshore boats with multiple day trips. As long as general category fishery is subject to a 400 pound possession limit per trip, however, there will be less incentive to consolidate shares on boats with higher fishing power or to invest in larger capacity boats. On the other hand, for fishing in the access areas, it may be beneficial to put allocations on vessels with higher fishing power in order to maximize the landings before an area closes to general category fishing. In such a case the participants of an association could gain at the expense of other vessels that fish individually or belong to a sector with smaller vessels. Because the general category fishery is managed by a vessel allocation system (whether in terms of individual fishing quota, trips, or tiers.), the scallop pounds or trips would be deducted from a vessel's allocation no matter where they fish. In other words, total pounds a general category vessel can fish will not be affected from access area closures. But fishing costs in access areas could be lower due to the high LPUE in these areas and the price per pound could be higher more U10s could be landed in the access areas compared to the open areas. Therefore, the vessels that join a CFA could maximize their profits if they could land more scallops from the access areas before they close with negative impacts on the profits of vessels that fish individually or belong to a sector with smaller vessels.

It remains to be seen how CFAs will affect employment and crew incomes in the general category fishery. Although scallop fishing with fewer vessels would reduce employment to some extent, given that many general category vessels participate in other fisheries as well, these negative impacts on crew could be small. There are also potential issues related to sectors and cooperatives such as a decline in competition and price fixing, especially when a few CFAs dominate the fishery. Such impacts for sectors in general category fishery could be small since the general category fleet lands a small proportion of the total scallop catch. A 20% limit on sector shares would also reduce such potentially negative impacts.

#### 5.4.4.3 Measures to address EFH closed areas if Phase II of the EFH Omnibus Amendment is delayed (Proposed Action)

The No action alternative would maintain the measures in place to minimize impacts on EFH. Specifically, areas closed in Amendment 10 and Amendment 13 to minimize impacts on EFH would apply to the scallop fishery unless modified under Phase II of the EFH Omnibus Amendment (Amendment 14 to the Scallop FMP). This increases impacts on the scallop resource if fishing is in suboptimal areas, as well as increases bottom time having impacts on bycatch and EFH.

The alternative would modify the EFH areas closed to scallop gear under Scallop Amendment 10 to be consistent with Multispecies Amendment 13. If selected, only the areas closed for EFH under Amendment 13 would be closed to scallop gear; the areas closed for EFH under Amendment 10 would be eliminated. As a result, effort could be allocated to Closed Area 1 where the scallops are larger instead of allocating more open area effort in areas with lower catch rates. This in turn could have positive effects on the scallop resource and future yield. According to the estimates, the future yield could increase by 526 mt or by 1.2 million pound a year, resulting in about $8 million (assuming a price of $7 per pound) more revenues from the scallop fishery per year. Over a period of 20 years, this would increase the cumulative present value of scallop fleet revenue by over $127 million at a 3% discount rate and by over $97 million at a 7% discount rate. Fishing in more productive areas would also reduce the fishing costs. Therefore this alternative is expected to increase revenues, profits and producer and consumer surpluses from scallop fishery with overall positive impacts on net economic benefits.

#### 5.4.4.4 Measures to improve research set-aside program (Proposed Action)

The proposed changes to the RSA programs are expected to have positive indirect economic benefits for the sea scallop fishery by improving the timing and administration of the research set-aside program. Upon implementation, the RSA program will be made multi-year and will be more in line with the specifications process and research projects and TACs could span two years if proposed as such. The RSA set-aside allocation for both open area DAS and access area trips will be changed from a percentage to a set poundage, and this value will initially be 1.25 million pounds. Having dedicated resource for funding research to survey access areas will improve the Council's ability to allocate the appropriate amount of effort to prevent overfishing and optimize yield. Rollover of unused RSA TAC will be used for awarded projects that apply for compensation based on an incorrect estimation of price-per-pound in the FFO. A grace period of one quarter of the following fishing year will be implemented as an extension for harvesting compensation TAC if needed. There is support for increasing public input of the RSA process through increased involvement of the advisory panel in setting research priorities and participating on management review panels if not involved in proposals. Finally, three measures were identified from which RSA projects could be exempt if identified in the proposal. These are crew restrictions, the seasonal closures in access areas, and the requirement to return to port if fishing in more than one area. Eliminating the crew restriction on research trips is to enable more researchers onboard. For example, allowing research trips access in Elephant Trunk during the seasonal closure of September 1-October 31 could help researching turtle interactions and to determine if indeed these two months have greater probability of interaction than other times of year. Eliminating the requirement to return to port if fishing in more than one area on a research trip would reduce the steaming time and allow more flexibility. If as a result of these measures, the program can be more streamlined and worthwhile projects can occur with fewer obstacles, better and timelier research will result in indirect benefits on the scallop resource and yield and will increase economic benefits from the scallop fishery.

#### 5.4.4.5 Measures to change the scallop fishing year and addition of a third year of specification to the framework

##### 5.4.4.5.1 Change the start of the fishing year to May 1

Changing the start of the fishing year to either May 1 will reduce the time lag between the fishing year and the time when the survey data becomes available. A more accurate estimation of TACs for the access areas will reduce uncertainty associated with the rotational area management, and an implementation time that coincides better with the fishing year will benefit the scallop fishery and have positive economic impacts on the participants. On the other hand, there will be some business risks associated when the fishing year starts at a later date as discussed below. Under the no action alternative there will be no change in the scallop fishing year and the issuance date for general category permits. Since overfishing of the scallop resource due to incorrect estimation of TACs and DAS allocations needs to be corrected by the framework, the no action alternative will result in more stringent regulations and a decline in scallop landings in future years, which will have negative impacts both on the scallop fishermen and on seafood consumers.

The change in the fishing year will, however, require a change in the business plans of the scallop fishermen and create some risks if plans do not materialize due to unforeseen conditions. Presently, the fishing year begins at a time when meat-weight of scallops begins to increase and a higher yield per unit effort could be obtained from scallop fishing. As a result, the vessels start using their day-at-sea based on the current resource and market conditions and fishing costs (such as fuel prices). If the fishing year starts in May, the vessel owners may need to postpone part of their day-at-sea allocations until the following March, since 16% to 23% of scallops are usually landed during the months of March and April (Table 132). If during these months, the resource and market conditions turn out to be less favorable than they expected a year ago, for example, if scallop prices or catch per-unit effort decline due external factors, they will incur a loss from not using them in earlier months. Also unforeseen conditions, such as a vessel breakdown, illness, or unfavorable weather could affect how many of the day-at-sea allocations could be used at the end of the fishing year.

Present regulations allow a vessel to carry over 10 days-at-sea to the next fishing year. Therefore, if a vessel could not use more than 10 days of its day-at-sea allocation at the end of the fishing year due to unforeseen conditions, it will face a decline in revenue unless there is a change in regulations to take into account such conditions. In other words, starting the fishing year at a later date will require longer term planning and will create some risks due to reduced predictability of the resource and market conditions over a longer horizon. Negative impacts associated this change could decline over time, however, as the vessel-owners gain experience with the new fishing year and learn to adjust their business plans more efficiently to the new conditions. Even though there could be some short-term decline in producer benefits if landings do not occur under the most optimal conditions due to the reasons discussed above, there is no question that more accurate estimation of area TACs and day-at-sea allocations will improve scallop yield over the long-term, increase revenues, and reduce the business costs associated with constantly changing regulations. Therefore, the positive economic impacts of changing the fishing year are expected to outweigh the negative impacts in some circumstances when the scallop resource and market conditions turn out to be less favorable than expected.

**Table 131. Distribution of scallop landings by limited access vessels by month and calendar year**

| MONTH | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|
| 1 | 1.39% | 4.30% | 3.55% | 2.86% | 2.42% | 4.76% | 3.00% | 1.82% |
| 2 | 3.54% | 3.55% | 4.95% | 3.46% | 4.55% | 4.28% | 2.76% | 1.19% |
| 3 | 6.97% | 5.81% | 6.43% | 7.11% | 7.95% | 6.84% | 6.56% | 12.68% |
| 4 | 9.66% | 10.44% | 10.26% | 8.50% | 10.09% | 10.01% | 10.12% | 10.51% |
| 5 | 14.70% | 13.36% | 11.72% | 13.31% | 12.43% | 13.55% | 11.21% | 12.57% |
| 6 | 12.67% | 12.13% | 12.82% | 13.65% | 13.15% | 12.85% | 16.13% | 17.46% |
| 7 | 11.88% | 12.65% | 11.58% | 12.86% | 10.53% | 13.60% | 15.85% | 12.45% |
| 8 | 11.31% | 9.66% | 11.96% | 10.70% | 9.51% | 11.45% | 15.13% | 10.56% |
| 9 | 8.31% | 8.14% | 8.90% | 6.82% | 7.74% | 8.45% | 7.19% | 6.20% |
| 10 | 8.83% | 8.36% | 7.05% | 9.91% | 6.49% | 5.45% | 5.50% | 5.23% |
| 11 | 5.00% | 6.02% | 5.92% | 6.78% | 8.79% | 5.09% | 3.66% | 4.76% |
| 12 | 5.74% | 5.57% | 4.87% | 4.03% | 6.36% | 3.66% | 2.86% | 4.56% |
| Grand Total | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |

**Table 132. Distribution of scallop landings by limited access vessels by period**

| Period | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|
| Mar.-Apr. | 17% | 16% | 17% | 16% | 18% | 17% | 17% | 23% |
| Apr.-July | 39% | 38% | 36% | 40% | 36% | 40% | 43% | 42% |
| Aug.-Feb. | 44% | 46% | 47% | 45% | 46% | 43% | 40% | 34% |
| Grand Total | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

#### 5.4.4.5.2 Extend scallop specification packages with third year default measures (Proposed Action)

The proposed action includes adding a third year of specifications to the framework process in order to prevent the outdated measures getting implemented due to the delay in the implementation of the two year framework actions. In other words, this measure would alleviate some of the implementation issues caused by the time lag between the fishing year and the time when the survey data becomes available. The measures that are created for Year 3 will be more in line with survey results and more consistent with science and PDT recommendations. This serves as a "safety mechanism" to prevent against "No Action" rollovers during implementation delays that do not take into account the recent changes in scallop stock abundance and may cause undesired negative effects on yield or require further management intervention. Since this action will result in landings more consistent with the updated scallop biomass estimates, it is expected to have positive indirect affects on the scallop fishery and total economic benefits from the fishery.

### 5.4.4.6 Addition to the list of frameworkable items in the FMP (Proposed Action)

Making the possession limit frameworkable would allow the Council to adjust the possession limit up or down in response to changing needs of the recently-implemented IFQ program. All the aspects of ACL management specified in this action would be able to be modified through framework actions and will allow the Council to adjust the specification of OFL, ABC, ACLs and ACTs, the buffers identified for management uncertainty or scientific uncertainty, the accountability measures for scallop ACLs and other sub-ACLs allocated to the scallop fishery to the changing resource conditions. The frameworkable items also include modification of the amount of the research set-aside program allocation and modification of the EFH boundaries, monitoring and reporting requirements associated with ACLs, timing of AM measures, and new ACLs that are not currently part of this program. Adding these to the list of frameworkable items will allow the Council to more easily adjust the allocations according to the resource conditions and as needed in terms of research priorities or to make further changes to benefit EFH should prolonged delays to the Omnibus EFH Amendment occur or if it is more practicable to make adjustments by framework. As a result, these measures will have positive impacts on the scallop yield over the long-term and will result in higher economic benefits from the scallop fishery.

### 5.4.5 Sources of risk and uncertainty in the analyses

The costs and the benefits of the proposed alternatives were analyzed based on the biological projections of landings and the available information about the vessel costs and characteristics, crew shares and prices. The numerical results of these analyses should be interpreted with caution due to uncertainties about the likely changes in

- factors affecting scallop resource abundance
- fishing behavior
- fixed costs
- variable costs
- import prices
- demand for scallop exports
- bycatch and revenues from other fisheries
- the crew share system
- change in the number of active vessels
- structural changes in ownership
- changes in the composition of fleet in terms of tonnage, HP and crew size of the active vessels
- disposable income and preferences of consumers for scallops.

The absolute values of the economic cost/benefit analysis should be used, however, in comparing proposed action with the other alternatives since the uncertainties related to landings and prices are expected to affect all the alternatives in the same direction.

The landings streams, DAS and LPUE were obtained from the biological model, which is based on fishing mortality by area and the inputs are not fishery-based in terms of DAS, etc. The biological simulations do not model individual vessels or trips; it models the fleet as a whole. The output of the biological model and the landings streams were used to estimate the costs and benefits of the hybrid OFD and modification of EFH areas. There is uncertainty regarding how or if the landings streams with the landings streams with the new system of ACTs, buffers and AMs will be different from the landing streams without a change in management process, i.e., under the status quo scenario. Regardless of such uncertainty, the new system is expected to result in higher economic benefits in the long-run from the scallop fishery. As discussed above in Section 5.4.2, having an ABC control rule and minimizing risk to the resource through buffers and AMs should help prevent overfishing and have beneficial impacts on the scallop resource, scallop yield, revenues, producer and consumer surpluses, and net economic benefits from the fishery.

The prices are estimated using the updated ex-vessel price model described in Appendix III. This model takes into account the impacts of changes in meat count, domestic landings, exports, price of imports, income of consumers, and composition of landings by market category (i.e., size of scallops) including a price premium on under count 10 scallops. The important changes in external factors, i.e., in exports, imports, value of dollar, export and import prices had some unpredictable impacts on scallop prices in recent years, first resulting an increase to over $8 per pound (in terms of 2008 prices) in 2005, then a consequent decline to about $7 per pound (in terms of 2008 prices) in 2006 even though there was not a significant increase in scallop landings in 2006 (about 56 million lb.) compared to 2005 (about 54 million lb.). In 2010 fishing year, however, the decline in the value of dollar, increase in the landings of larger scallops resulted in much higher prices (about $7.70 average) than anticipated in the last Framework action (Framework 21). Any change in the external factors that affect price, such as in import prices or in the differences between the actual and projected landings will result in differences in the actual and estimated prices.

For these reasons, the empirical results of the economic analyses should be used to compare the alternatives with each other and the with the baseline scenario (No Action), since a change in the variables listed above will change the numerical results in the same direction. For example, an increase in import prices would lead to a rise in ex-vessel prices and revenues above the levels estimated here. An increase in the price of oil, on the other hand, would increase the variable costs and reduce the cost savings under all options. While these changes would affect the absolute values of net economic benefits, the ranking of the alternatives in terms of their impacts on revenues, costs, and net benefits are not expected to change.

## 5.5 SOCIAL IMPACTS

The social impacts of this action are described below. There are three overall sections of the social impacts. First, a qualitative discussion of the expected impacts of each measure individually. Second, a detailed social impact assessment literature review of leasing and permit stacking related to research on impacts of consolidation. Third, an assessment of potential impacts of stacking on shoreside businesses that describes the direct, indirect, and induced multiplier effects that remain within the local economy before and after stacking. These three sections combined describe the potential impacts on alternatives under consideration in this action, with more emphasis on the potential impacts on the social structure of fishing communities and other shoreside businesses in the Northeast.

### 5.5.1 Summary of qualitative social impacts of measures under consideration

#### 5.5.1.1 Compliance with re-authorized Magnuson-Stevens conservation and management act

If the measures to implement accountability measures (3.2.3.9) help prevent overfishing, then the positive impacts to the resource will in the long-run provide positive social benefits for scallop fishermen and communities. Proposed accountability measures for a sub-ACL of YT flounder (3.2.3.11.2.1.1 and 3.2.3.11.2.1.2) that limit fishing areas may have social impacts given potential effort shifts predicted in the biological impacts section. Fishing in areas with lower meat weights, in terms of social impacts, would lower incomes while labor expenditures increased, while closing areas could negatively impact those fishermen who fish in those areas and who do not practice a mobile fishing strategy. Derby fishing that may result from the possibility of reduced days (3.2.3.11.2.1.3 and 3.2.3.11.2.1.4) could have negative safety implications for fishermen as well as negative impacts on the spacing and amount of income.

#### 5.5.1.2 Permit Stacking and Leasing

Economic signals such as quota prices for example, which are theoretically expected to reflect embodied resource rent, often mirror more complex sociocultural pressures and values in the case studies above. Fishermen do not always lease or sell when expected, and prices may reflect more structural relations between more and less powerful segments of an industry or community than they do an unbiased reflection of value. Thus, as the case studies in Section 5.5.2 demonstrate, consolidation measures like ITQs, but also more generally leasing and stacking, tend to have their negative impacts on those less powerful segments of the fishing industry, namely the crew, or the small business owners without a fleet of vessels or vertically integrated business. Those who are better able to take advantage of measures like leasing or stacking are then increasingly able to exert control in various markets, such as leasing quota, hiring crew, or even affecting prices that fishermen receive for their product. These kinds of changes, in turn, affect the structure of communities—through changing relations between people and shifts in dominant values—and affect the viability of fishing communities as some are disproportionally impacted by geographic shifts in fishing businesses.

National Standard 8 requires that fishery management plans “take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities" (16 U.S.C.§1851(2)(8)). NS8 directs important attention to how measures like leasing and stacking may impact the sustained participation of fishing communities dominated by smaller operations and the cumulative effects of market changes reflecting more dominant interests, in which new participants find entry increasingly difficult and smaller operations are increasing dominated by larger ones. As Connor and Alden (2001: 396) write of the experience of Australia, "given the effective use of output controls and the low opportunity costs of vessel capital, any expressed urgency regarding structural adjustment of the fleet must be regarded as unwarranted. If vessels are scrapped, the efficiency gains will be very small, and the social costs of loss of employment and local economic activity in regional coastal towns would not have to be large to tip the balance in favour of the status quo."

#### 5.5.1.3 Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation

By removing the influence of the un-harvested biomass from closed areas from the open areas' mortality estimate, the expected higher $F_{target}$ would provide greater fishing opportunities in line with rotational management, with positive social impacts for scallop fishermen.

#### 5.5.1.4 Minor adjustments to the limited access general category management program

A rollover allowance for general category IFQ permit holders (3.4.2.1) would provide greater flexibility for fishermen. Modifying the general category possession limit (3.4.2.3) might increase economic returns for these fishing trips, with positive social impacts, but the further the fishery moves from trip limits to a pure ITQ, the further it moves from the small-scale, day-boat fishery that Amendment 11 sought to ensure. Allowing LAGC quota to be transferred from IFQ permits (3.4.2.5.1) could also move the fishery closer to a pure ITQ with a host of potential negative impacts (see stacking and leasing above). The transfer of quota to a community-based trust (3.4.2.5.2), however, could have many positive impacts, as the literature on co-management and community-based management suggests.

#### 5.5.1.5 Measures to address EFH closed areas if Phase II of the EFH Omnibus Amendment is delayed

Modifying the EFH areas closed to scallop gear under Scallop Amendment 10 to be consistent with Multispecies Amendment 13 (3.4.3.2) would have positive social impacts in that it would expand the area available in the access program for fishermen to fish, enhancing flexibility.

#### 5.5.1.6 Measures to improve research set-aside program

Improvements to the research set-aside program, in that they would enhance the possibilities for and benefits from research, would provide positive social impacts for scallop fishermen and communities that participate in the fishery.

#### 5.5.1.7 Measures to change the scallop fishing year

Keeping the scallop fishing year at March 1 (No Action, 3.4.5.1) would create no negative impacts in the short-term on the fleet associated with changes in business or fishing practices. It would however, continue problems resulting from mis-estimation of TACs and the need for compensatory regulatory action, and the fact that actions are not implemented at the start of the fishing year. These problems indirectly cause problems for fishermen from the constant barrage of regulatory action, which itself can unsettle business and fishing practices. If the start of the fishing year is changed to May 1 (3.4.5.2), then consistency would be created across most fisheries and regulatory action might be more consistently applied depending on timing of research surveys, with positive benefits for the fishery, though there would be the cost associated if fishermen had to change their fishing practices in any way.

### 5.5.2 Social impact assessment literature review of leasing and permit stacking

Leasing and permit stacking, though different in many respects, are both forms of fleet consolidation within a fishery. In terms of their social impacts, one can expect similarities to other forms of consolidation, such as ITQs, because many of the social impacts stem directly from the reduction in capacity or from the costs associated with leasing or buying quota, irrespective of whether such quotas are transferable. Further, because ITQs have been widely studied in many different contexts around the world, they help provide a full picture of potential consequences from consolidation. Since the scallop fishery is a limited access fishery, privatization of the resource—one of the criticisms of ITQs—has already occurred, yet any windfall gain can only be realized if a permitted vessel is sold and the owner leaves the fishery. That is to say, the lack of transferability has tended to slow down consolidation and accompanying social impacts, but this would be loosened with leasing and stacking. Moreover, measures like stacking could become "an effective intermediate step towards IQs" (Hastie 2000), thus their potential impacts become doubly significant. The primary social impacts that have been documented in empirical cases involving consolidation (explained in greater detail below) range from employment loss, decreased income, decreased quality of life, changing relations of production, structural disadvantages to smaller vessels and firms, dependency and debt patronage, concentration of capital and market power, inequitable gains, regulatory stickiness, reduced stewardship, decreased community stability, loss of cultural values, and so on.

Leasing and stacking may provide a greater degree of flexibility for business operations, which would be a positive economic and social impact. Yet although economic theory tends to predict positive benefits in terms of efficiency and profitability, these gains—if and when they occur—accrue primarily to permit-holders and boat-owners remaining in the fishery. And while permit stacking and leasing may or may not lead to or further all the negative social consequences listed above, real-life examples demonstrate the complex social relations involved in consolidation, with negative impacts more apparent when the fishery and the community are seen in totality. Stacking of course can only be utilized by owners of multiple vessels, but even with leasing, smaller entities and others impacted, like crew, tend to be at a disadvantage. The following thus begins with a summary of the impacts to crew and businesses, but moves on to situate these impacts in their reciprocal effects on fishing households and communities.

- ***Impacts to crew***

NMFS does not specifically collect information on crew apart from crew size on trips and information on the vessel operators. Unfortunately, it is difficult to assess overall employment impacts from crew size alone, given that rotating crew among vessels may disguise already reduced employment levels; the collection of basic information on crew and variations in the lay system would enrich assessments of fishery-specific outcomes in particular places. Nonetheless, case studies on consolidation impacts provide a rich source of information about such issues. In most instances when consolidation measures are implemented, employment on vessels decreases as can the income received by crew. Employment numbers in the Mid-Atlantic surf clam fishery dropped by nearly 80 percent between 1990 and 1999 (from 155 to 34 employed crew members) as the industry consolidated in the wake of ITQs (Brandt and Ding 2008: 744). McCay et al. (1995: 101) also found decreases in this fishery, even though labor was already rotating among boats (similar to claims in the scallop fishery). Employment reductions have also been noted in Australia's southern bluefin tuna fishery (Guyader and Thébaud 2001: 107) and the halibut fishery in British Columbia, where numbers of fishermen decreased 32% from both reductions in the size of crew on remaining vessels and loss of employment on displaced vessels (Casey et al. 1995: 225). In the Icelandic case however, employment numbers on vessels actually increased, while shore-side employment decreased. As Eythórsson (1996: 217) writes, between 1984 and 1992, the number of fishermen working onboard a fishing boat increased 23 percent, or 1,300 people. "The most obvious explanatory factors are the growth of the labour-intensive small boat fleet [outside ITQ regulation] and the growing percentage of frozen fish products processed on board [factory trawlers, operated by companies selling their quota to other fishermen]." Yet, he continues, "During the same period, the number of workers employed in the land based fishing industry had reduced by one third, from approximately 10,500 to 7,000 employees" (ibid.). In this case, effort displaced from the quota-regulated fishery into other fisheries increased capacity overall when fishing is seen ecosystem-wide, at the same time that it had overall negative employment impacts in fishing communities.

As Bonnie McCay writes, "When captains and crew are rewarded for their work through shares of the catch, the sharing formula often changes under ITQs reflecting the shift in power, so that the owner retains a larger portion of the total. There may also be a movement toward wages instead of shares" (1995: 9). Such a movement towards wages has been documented in a number of fisheries, such as the Tasmanian rock lobster fishery (see Bradshaw 2004: 108). These pressures are not confined to buying quotas, such as in an ITQ system, but also concern leasing, as is being considered in Amendment 15, for it is the competition for quota, whether bought or leased, that creates this dynamic: "The smaller the crew rate, the higher the willingness to pay for quota […] Even if firm 4 is the most efficient from a technical point of view, the weakness of its capital owner in bargaining with the crew can affect its bargaining power on quota markets. The implication is that the most cost-efficient operators on quota markets will likely be those who, not only are the most efficient in terms of fishing operations, but also who have best been able to reorganise their internal structure, particularly as regards contracts between vessel owners and crews" (Guyader and Thébaud 2001: 110).

Crew shares and crew incomes were found to have decreased in the mid-Atlantic surf clam and ocean quahog, and Nova Scotian (McCay et al. 1995: 101-102), and Icelandic fisheries (Eythórsson 1996: 218). In these cases, the negative impact on crew income stems in part from leasing costs being passed onto crew, for example by decreasing the lay given to crew, or by taking out the cost of quota from catch value before shares are calculated. According to McCay et al. (1995: 101), firms that hired kin or neighbors were less likely to pass the costs on to crew, whereas larger firms were more likely to. The implication of this is that measures like stacking and leasing that are designed ostensibly to just reduce capacity or increase economic efficiency may in fact change the very forms of fishing, favoring a more industrial rather than kin or community-based approach fishing. When fishing with leased quota in Iceland, fishery income of smaller boat owners was also reduced from 40-50 percent (Helgason and Pálsson 1997: 457). Additionally, "speculative leasing transactions (kvótabrask) were in some cases undertaken in order to reduce wages" (Eythórsson 2000: 488). In the case of the British Columbia halibut fishery, Pinkerton and Edwards (2009: 711) also found considerable decreases: "[Crew] are now an unorganized surplus labor force (because so many crew jobs have been eliminated) hired at whatever the market will bear. They formerly got 10–20% of the catch value before ITQs and now get 1–5%. Whereas the value of the halibut fishery has increased by 25% between 1990 and 2007, the proportion of that value retained by the crew share has dropped by 73%."

In contrast to earlier studies (e.g. McCay et al. 1995), Brandt and Ding (2008: 744) found that crew income eventually increased in the surf clam fishery. In this case, an increase in vessel profitability compensated for reduced shares, through "an increase in the mean amount of time vessels spent at sea." Working longer hours, however, can result in diminished quality of life, especially when fishermen are no longer able to participate as much in family or community life, as was found in the Nova Scotia (McCay et al. 1995: 102). Whether increased income from a fishing trip can compensate for changes in social relations and daily life is an empirical question. On a related concern, a recent study on vessel safety has also found that accident rates in ITQ fisheries do not decrease, at least among those that do not limit ownership, as is often claimed:

> Small operators are often limited to leasing quota from large corporations or non-fishers, or to working under contract for vertically integrated businesses. In such cases, the expected safety benefits of IQs (e.g., reduced incentives to rush for fish or operate in poor conditions) may be negated if pressures from quota holders supersede the independent decision-making of vessel owners. This may have safety implications for the fisheries of Atlantic Canada, where owner/operator and fleet separation policies are being undermined by so-called 'trust agreements' in which processors essentially pay for licenses and vessels on behalf of small-scale vessel owners and subsequently exercise some control over their fishing activities (Windle et al 2008: 707, reference omitted).

Lack of control, especially over important decisions such as when to fish, can thus negatively impact both safety-at-sea and quality of life for fishermen, fishing households, and fishing communities.

- ***Impacts to small boat-owners***

In many cases, capacity reduction measures do decrease capacity through the number of vessels participating in a fishery and lead to consolidation among firms. In the ocean quahog and surf clam fishery of the Mid-Atlantic, a "significant reduction in the number of vessels" came about due to the decisions of owners of multiple vessels "to consolidate harvesting on fewer vessels" and because of "owners of ITQs who cease harvesting but participate in the fishery by leasing their ITQs" (Brandt 2005: 21). In New Zealand, "In 1996, 86% of total allowable commercial catch allocated as ITQ was allocated to the largest 12 companies (fishers) compared to 49% in 1986 [6]. Stewart and Callagher found that concentration in the industry has continued. The exit of fishers had not been matched by entry, showing that net exit occurred and implying that the released quota was being purchased by incumbent firms" (Stewart et al. 2006: 329). Similarly, Gibbs (2007: 113) writes of how ITQ management in New Zealand has led to "the rationalisation or aggregation of fishers and vessels into a small number of larger vertically integrated fishing companies [7]. This was partly a consequence of the development of capital-intensive deep-water fisheries over the same period; however, there has been a significant decline in the number of owner-operated vessels in the inshore fleets." In Icelandic cod fisheries, "there have been radical changes in the total number of quota holders, a reduction from 535 to 391 (27%), from 1984 to 1994" (Pálsson and Helgason 1995, quoted in Pálsson 1998: 283). The reduction in quota holders corresponds to increasing concentration in the fishery: from 1984 to 1994, the percentage of ITQs in Iceland owned by 70% of the smallest holders decreased from 20% to 10%, leading to "a continual increase in the level of inequality and a growing concentration of ITQs at the top" (Pálsson and Helgason 1995: 130).

In others cases however, capacity actually increases in a consolidation program because of the political-economic context in which it operates and because of the sociocultural values of fishermen who attach other than monetary values to continuing in the fishery. For example in the Icelandic case, while the number of quota-holders decreased, capacity—in terms of vessel power—actually increased: "Since the introduction of ITQs in 1984 to the end of 1997, the fleet has in these terms [of vessel size] expanded by almost 13%, or 14.100 GRT. Engine power, which also provides an indication of catching capacity, has increased correspondingly" (Eythórsson 2000: 487). The reasons in this case have to do with the particular combination of an increase in larger vessels that could move into international fishing waters while they leased their quota to smaller vessels, and the movement of small vessels into a non-quota inshore fishery reserved for small boats (Eythórsson 1996: 215). In Australia, on the other hand, a low "salvage value" for vessels and quotas convinced many fishermen to stay in the South East Trawl fishery "because the pay-offs of waiting for a small increase in quota price can remain positive even where average total costs are very high. Hence, in the SETF, the combination of uncertainty over stocks, and therefore the appropriateness of TAC levels, and lack of alternative fisheries to move to may tend to lock-in existing vessels for the duration of their serviceable lives […] In fact, overall vessel numbers in the fishery have remained more or less static since the introduction of ITQs." (Connor and Alden 2001: 391-392). Cultural values can also motivate fishermen to remain in a fishery despite consolidation measures or financial incentives to leave; as Bonnie McCay (1995: 7, footnote omitted) explains "'Job satisfaction', a confluence of personal, situational and socio-cultural community values, is among the factors that can affect appraisal of opportunity costs and the price of exit. Another of these factors can simply be that the value of the vessel is likely to be low […] the fishing vessel is where capital is reinvested and, like the family farm, the hoped-for basis of future income. The big difference is, of course, that fishing vessels often have no alternative uses or values."

In general though, it is the smaller firms which tend to be disadvantaged in markets for buying or leasing quota. This is of considerable importance for the scallop industry, given the preponderance of fleet-owned vessels, as shown in the table below. Because risk is included in the price of credit, those who have to borrow more to pay for leased quota "stand seriously exposed to continued stochasticity in annual allowable harvests. If quota buyers bought a number of shares and are now carrying debt-service obligations, they are seriously exposed if fish stocks fail to recover, or if they recover more slowly than initially imagined" (Bromley 2005: 224). As Copes and Charles (2004: 176) write, "when ITQs are freely tradable, corporations and large investors in the fisheries sector may use their financial power to buy up large aggregations of quota, thereby concentrating a substantial share of fishery access rights in their hands. They may assign their quota holdings to larger vessels which they operate directly, or lease out quota (with or without boats) to independent fishers, or provide loans to fishers to buy boats and quota—in all cases usually on condition that the fish caught be delivered to their plants." In Iceland, for example, many smaller operators received such small quotas that they had to lease more or sell what they had. "A major factor in the apparent success of the larger companies in accumulating fishing rights is their ready access to capital through the Icelandic banking system, something that is less available to the smaller operators. The larger companies are generally vertically integrated businesses that own two or more vessels. Their approach to 'business' and ITQs is very different to that of the smaller operators" (Pálsson and Helgason 1995: 134). McCay et al (1995:102) also found "that there is a strong trend to build upon the pre-existing structure of dominance by a few firms. By 1995, nine firms, including two large processors, controlled 82% of the ITQ for surf clams and 10 firms controlled approximately half of the ITQ for ocean quahogs." Likewise, they continued, that in Canada "such a trend is also apparent, despite measures intended to protect the small, independent owner-operated fishing venture" (ibid). Further, they write that consolidation in the SCOQ fishery "required investment. Larger owners reported having to invest large sums to purchase or lease ITQs in order to maintain supply or market position. In their calculations, this investment was equivalent to capital investment and thus 'capital stuffing' in quotas may be happening here as in New Zealand" (ibid: 103).

**Table 133 – Summary of vessel ownership data and landed value.**

| | No. of corps (esti-mated) | No. of boats | landed value 2008 | % of limited access vessels | % of landed value (2008) | Landed value/corp (<u>not</u> net value) | % landed value from Fulltime | % landed value from Fulltime small dredge |
|---|---|---|---|---|---|---|---|---|
| own 1 vessel | 76 | 76 | 66,914,555 | 22.0 | 20.6 | 880,455 | 75.3 | 15.0 |
| own 2-4 vessels | 40 | 106 | 100,063,987 | 30.6 | 30.8 | 2,501,600 | 72.7 | 21.4 |
| own 5 or more vessel | 21 | 164 | 157,444,227 | 47.4 | 48.5 | 7,497,344 | 87.9 | 6.7 |

Single-boat owners may also be disadvantaged in hiring crew members, if fishermen desire year round employment that could be better accommodated by an owner with stacked permits. Single-boat owners may also be dependent on larger interests for access to waterfront and other port infrastructure, a dependence which could further weaken their position with increasing fleet consolidation as well as contribute further to impacts on a community's waterfront access for other users. Vessels that are in a better financial position are also better able to afford higher lease costs, which can eventually bid up the cost of leasing quota (Pinkerton and Edwards 2009: 709). In general, interests with multiple vessels may be able to negotiate for lower prices for insurance and other business costs that can be purchased in bulk, further consolidating advantages of scale. In the case of the Tasmanian rock lobster fishery, fishermen with smaller operations who had not bought extra licenses increased the market demand for leased quota, leading to increased leasing costs (Bradshaw 2004: 106). Stewart et al. (2006: 331) write similarly that "Historically major quota holders report higher rates of return than for minor quota holders, suggesting they would be prepared to pay higher prices for quota […which] could potentially make acquisition uneconomic for some minor quota holders […while leasing] places an additional direct cost which must be absorbed by the fisher, given the need to maintain competitive prices in the wholesale and retail markets they operate in. In reality, minor fishers are likely to be price takers." Finally, in Iceland, as Eythórsson (1996: 218) writes:

> the favourable position of the offshore fleet, relative to inshore vessels, is not necessarily due to more efficient use of capital and labour in the harvesting operation; it also depends on the more favourable options open to the offshore fleet, including the opportunity to fish outside the EEZ. Besides, large companies

> are likely to be in a better position to follow a long term strategy and to have easier access to bank credits and support from municipal authorities than the more marginal fisherman-owners of inshore vessels. The high quota leasing prices can to some extent be explained by the unequal positions of the offshore and inshore vessels. Facing a choice between quitting fishing for good or continuing fishing with leased quotas, in a situation of poor employment alternatives, fishermen owners of inshore vessels have been willing to pay astonishingly high leasing prices. With a large number of vessels with either too little or even no quota, the demand for quota far exceeds supply. It seems therefore, at least in a transitory period, that high quota prices may be generated by the very existence of excess catching capacity, a paradoxical situation in terms of the ITQ model.

Leasing prices that become a large cost to fishermen can result in a number of negative impacts in addition to decreased crew or owner income (discussed above), such as dependency and debt patronage, and changing structural relations of production. Together with pressures for consolidation, this can further reduce the bargaining power of many fishing participants at the same time that larger firms may increasingly have market power, which could lead to control of the prices of landed fish, of leased quotas, or of crew remuneration (NRC 1999). In Iceland, leasing prices for cod quotas during 1991-1995 were more than half of average cod landing prices (Eythórsson 1996: 216). Smaller firms that received too little quota to remain viable then become dependent on larger firms for leased quota (Eythórsson 1996: 218); in some of the arrangements between large companies and smaller owner-operators, the fishermen who catch the fish must then deliver it to the company's processing plant (Helgason and Pálsson 1997: 457) Such new relations of production have generated controversy in Iceland because they violate cultural norms concerning fairness and equity. In the words of many fishermen there, "boat owners without quota (the 'serfs') are granted access to the fishing stocks, the equivalent to the medieval estate, on the prerequisite that they hand over their catch to processing plants (the 'lords') in return for a fixed price. Fishers frequently argue that excessive quotas, those that are not used by quota holders, should not be leased for money but returned to a common pool and redistributed to other boat owners who have more use for them" (Pálsson 1998: 283-84). Yet with leasing, larger interests such as processors or vertically integrated firms—fairly common in the scallop fishery—could potentially exact profits from the fishery and potentially increase their market power and concentration in the fishery, without even physically maintaining a boat should measures allow fully market-based leasing.

Cultural norms can also interact with political economic relations to create other forms of debt patronage. In the British Columbia halibut fishery, Pinkerton and Edwards (2009: 709) note how the difficulties in violating norms of equity that were embodied in the share system, where crew were "co-venturers" along with owners, has resulted in markets inefficiencies:

> Many quota owners prefer to lease their quota out through a processor as a broker because the processor is in a better position to get the highest price and because, as several fishermen stated, they do not want to be 'guilted by other fishermen' about the high lease price they are asking. Similarly, many lessee fishermen do not wish to deal directly with the quota owner because of their hostility toward the high lease prices […] Processors are brokers of most of the leases because they can afford to pay more up front, both because of their access to capital and

> because of their power in allocating fishing opportunity through control of a large amount of quota […] The price of quota when it is leased out to fishermen by the processors is confidential; it varies with arrangements and the bargaining power of the lessee. The lessee usually agrees to deliver catch from other fisheries to the processor as part of the arrangement. There is, therefore, asymmetric information between buyers and sellers of quota leases […] which confers market power to quota owners and to a lesser extent to the processors who buy up and reallocate quota leases. Processors may not charge a fee for this transaction, but the guaranteed delivery of the fish to them gives them leverage over the price of the catch. This may be an even more important form of market power. The resulting allocation of quota leases, and the stated and unstated terms under which they are allocated, are not the product of a freely operating market with open competition.

As McCay (1995: 6) writes, whether markets function as expected depends on the number of participants and transactions, as well as how quota management systems are devised, cautioning further that many "equity preservation measures lose their effectiveness and may even be abandoned as operators find innovative means to get around the restrictions. It is also possible to argue, as was done for the US surf clam and ocean quahog ITQ system, that excessive concentration of shares would be adequately handled by monitoring the allocation of shares and working with agencies whose job it is to protect against monopoly formation. However, that too may be weak protection" (ibid: 10, footnote omitted).

- ***Impacts to fishing practices***

Some analysts have argued that crew on boats with no stake in fishery will have no incentive to conserve or practice sustainable fishing (Phillips et al 2002). The reasons have to do with who is actually fishing, and with the incentive structure in a fishery characterized by perceived inequity. Regarding the first, for example, Bradshaw (2004: 108) writes "Many of the second generation of fishers under quota management are likely to lease rather than own an entitlement to the resource. It may be debatable whether ownership contributes to compliance, co-management and sustainable practices—and these may be possible without ownership—but it is undeniably the case in the Tasmanian commercial rock lobster fishery that fewer owners are on the water to exercise any supposed sustainability ethic." Indeed despite its recent popular attention, as Macinko and Whitman (2009) argue, it is effectively an underlying hard TAC that enables catch shares to manage overall landings, not incentives stemming from ownership.

Concerning the incentive structure itself and with a widening gap between labor and capital in the fishery, actual fishing practices may differ than are expected from capacity reduction measures. In a study designed specifically to contrast effort levels on leased quota trips, Brandt and Ding (2008: 746) found that given how costs are spread with a given lay system, "where the cost of leasing quota is shared between boat owner and crew, the crew will expend a lower effort level than on trips where the quota is owned outright by the boat owner. The consequence of this hidden action is observable as a higher harvest rate for trips using the boat owner's own quota than for trips using leased quota, as confirmed by an analysis of the surf clam fishery." More generally, communities "characterised by inequality, productivity-sapping competitiveness, disunity, and other attributes of social dysfunction lack the necessary entrenchment of values and institutional mechanisms essential to successfully implementing sustainable patterns of use in fisheries and of other environmental resources" (Phillips et al. 2002: 467, references omitted).

- ***Impacts to households and communities***

While transferable quota systems have in many cases increased profits for those remaining in the fishery, this comes with costs to crew and smaller operations, as detailed above. These impacts have direct impacts on communities from unemployment or reduced income from fishing trips, but there are also longer-term implications for the stability of fishing communities, like difficulties for new or younger fishermen to enter the fishery. In some communities, this had led to the erosion of place-based ways of fishing and collective measures of success in favor of individualized competition (Carothers 2008). Fishing households with reduced income may face stresses that multiply at the community level, but they do not only stem from monetary changes but from the loss of fishing opportunities more generally, as Pollnac et al. (2006: 5) explain:

> *Regulations requiring large capital investments can limit investments in other important areas such as vessel maintenance, the fishermen's homes, and their children's education—all impacting well-being. Changes that result in the loss of fishing opportunities, however, will have the greatest negative impacts, as alternative income projects are often problematic for this group […] Social problems associated with job dissatisfaction, as well as other variables mentioned above, can impact aspects of community structure including community solidarity and levels of compliance with fishery regulations. In turn, levels of compliance can feed back and impact aspects of fishery management. Further, other aspects of community structure, such as occupational structure, can impact activity attributes. Community power structure, which might include powerful fisheries organizations, can directly influence management as well as the external forces that influence management. Finally, individual attributes, social problems, and community structure all have an effect on well-being.*

Consolidation measures like ITQs, as well as stacking and leasing, are highly divisive among scallop fishermen and within communities precisely for such reasons (e.g. Olson 2006).

Some impacts are especially pronounced in quota systems because of the "transitional gains trap," in which first generation fishermen receive a windfall profit that future generations pay for (Copes 1986: 287), a situation that would also apply to a limited access fishery in which leasing is possible. As Philips et al. (2002: 465, references omitted) argue, a "dramatic increase" in quota prices in Tasmania has resulted in "increased ownership of quota units by non-fishing investors and increased ownership by non-Tasmanians. The high cost of quota units has now made it almost impossible for fish-workers without capital to work their way up from deck-hand to skipper, to eventually acquiring access rights and becoming owner-operators, the path followed by many in the past. The separation between capital and labour is becoming increasingly entrenched. Ownership of property in the form of quota units is increasingly providing power over dependent suppliers of contract labour." The likelihood of monopoly gains and concentration, in fact, are precisely why many critics argue for the superiority of either auctions or community development quotas, in that they can create possibilities for "coastal and fishing communities to collect and take ownership in the resource rent through co-management" (Trondsen 2004: 381) and which can direct attention to human capital that can become "stranded" when mobile capital leaves a community (Bromley 2005: 222).

Such capitalization and concentration, write Copes and Charles (2004: 176), can lead to "geographical concentration" in larger ports:

> *This will occur for reasons of operational efficiency and control, with quota owners tending to concentrate the fleets they own, or support, close to their processing and holding facilities. Diversion of quotas to larger centers has a cumulative economic effect in the smaller communities. Since they have fewer active boats left, boat repair, baiting, and other related activities are reduced, whereby total fishery-related employment is diminished to an even greater extent. Furthermore, a reduction in the economic multiplier effect from shrinking fishing income in the local economy means that in addition to fishery-related job losses, there may be considerable job losses elsewhere in affected communities. Thus, despite higher profits for the original group of vessel owners, the extent of job losses may swiftly produce an overall negative impact on smaller communities.*

Thus in Iceland, Eythórsson (2000: 488) describes new community relations where "there is a trend towards an ideological shift within the industry, leaving behind the idea that fisheries and fish processing should be locally embedded in fisheries communities. Many fisheries companies have joined the Icelandic stock-market, and ownership is in many cases not linked to any particular community. Investors without fisheries background are now well represented among the owners of quota holding companies." The impact of this falls particularly hard on remote communities that are dependent on fishing: "During the nineties, the vulnerability of fishing communities, especially small communities with poor employment alternatives, has become more visible as several fishing villages have lost most their quota as the owners have moved or sold out. A comparison of different size categories of fishing communities gives a clear impression that small communities with less than 500 inhabitants have on the average lost a much larger share of their quotas than the bigger communities" (ibid: 489).

McCay et al. (1995: 104) also write how geographic re-distribution can affect the security of coastal communities from loss of fishing income and from impacts on shore-side businesses: "the sell-out of the ITQ and harvesting and processing capital by a large multinational corporation [in the SCOQ fishery] resulted in the complete cessation of clamming and processing for one major coastal community of New Jersey for at least a year. In the Under 65' Nova case, the ability to purchase ITQ has contributed to a striking regional imbalance, which is also caused by differences in the health of the groundfish stocks in different regions." Shore-side businesses would also be affected by a decrease in servicing vessels, if fleet owners did consolidate.

These impacts go beyond the economic, and affect the quality of life and the nature of community:

> "There may also be serious non-economic losses for those who would rather have stayed in the familiar surroundings of their community if it had remained economically viable. Many of them would grieve the loss of accustomed social relations and a familiar and attractive physical environment. Finally, it should be noted that the reduction in the number of inhabited places along the coast would have adverse consequences for the country at large, for instance, in terms of tourism, by reducing serviced access to parts of the country that would be attractive to visit. The fundamental point here is that the economic costs to society

> of the concentration of fishing operations through ITQs are likely to be quite significant, and may be substantially larger than the gains enjoyed by the benefitting companies and vessel operators" (Copes and Charles 2004: 177)

These community-level difficulties can lead "to the loss of existing social capital which can be a critical force behind economic growth [… and with 'a reduced demand for fishing-specific skills' comes] a reduction in the value of the human and social capital involved in the industry" (Wingard 2000: 50). In Nova Scotia, "the egalitarian ethos of those communities is severely strained by the ability of a few processors and entrepreneurs to take advantage of the ITQ system, which has exacerbated differences in wealth and status within the community […which now reflect] one's position *vis-à-vis* government allocation and financial institutions [rather than the 'ideology of hard work']" (McCay et al. 1995: 105).

Capacity reduction measures—whether leasing, stacking, or transferable quotas—establish a trajectory that can be difficult to reverse once implemented. Fisheries that begin with limitations on transferability can quickly lobby to remove them given market pressures, as in Canada (McCay et al. 1995: 107), Iceland (Eythórsson 2000: 491), and Tasmania (Bradshaw 2004: 106). In Tasmania for example, a proposal supported by both government and the Tasmanian Rock Lobster Fishermen's Association to support quotas to help new fishermen to enter the fishery was blocked by quota owners: "There is a question mark, then, over the ability of the state, attenuated by the existence of private access rights that it created, to act responsibly in the longer-term interests of the fishery" (Bradshaw 2004: 108). Regarding the same fishery, Phillips et al. (2002: 465) write "the strength of vested interest that has become established as a result of past management policies, and the priority the legal and political systems give to promoting the financial interests associated with private property, means that government is severely constrained in how it manages the fishery […] at the expense of the broader public interest that would be better served by a wider distribution of the resource wealth."

- ***Conclusion***

Economic signals such as quota prices for example, which are theoretically expected to reflect embodied resource rent, often mirror more complex sociocultural pressures and values in the case studies above. Fishermen do not always lease or sell when expected, and prices may reflect more structural relations between more and less powerful segments of an industry or community than they do an unbiased reflection of value. Thus, as the case studies above demonstrate, consolidation measures like ITQs, but also more generally leasing and stacking, tend to have their negative impacts on those less powerful segments of the fishing industry, namely the crew, or the small business owners without a fleet of vessels or vertically integrated business. Those who are better able to take advantage of measures like leasing or stacking are then increasingly able to exert control in various markets, such as leasing quota, hiring crew, or even affecting prices that fishermen receive for their product. These kinds of changes, in turn, affect the structure of communities—through changing relations between people and shifts in dominant values—and affect the viability of fishing communities as some are disproportionally impacted by geographic shifts in fishing businesses. National Standard 8 requires that fishery management plans "take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities" (16 U.S.C.§1851(2)(8)).

NS8 directs important attention to how measures like leasing and stacking may impact the sustained participation of fishing communities dominated by smaller operations and the cumulative effects of market changes reflecting more dominant interests, in which new participants find entry increasingly difficult and smaller operations are increasing dominated by larger ones. As Connor and Alden (2001: 396) write of the experience of Australia, "given the effective use of output controls and the low opportunity costs of vessel capital, any expressed urgency regarding structural adjustment of the fleet must be regarded as unwarranted. If vessels are scrapped, the efficiency gains will be very small, and the social costs of loss of employment and local economic activity in regional coastal towns would not have to be large to tip the balance in favour of the status quo." Thus the question of capacity reduction is ultimately not simply an issue of economic efficiency, but a question of what values to promote and what the future of the fishery and its fishing communities should look like.

## 5.6 IMPACTS ON NON-TARGET SPECIES

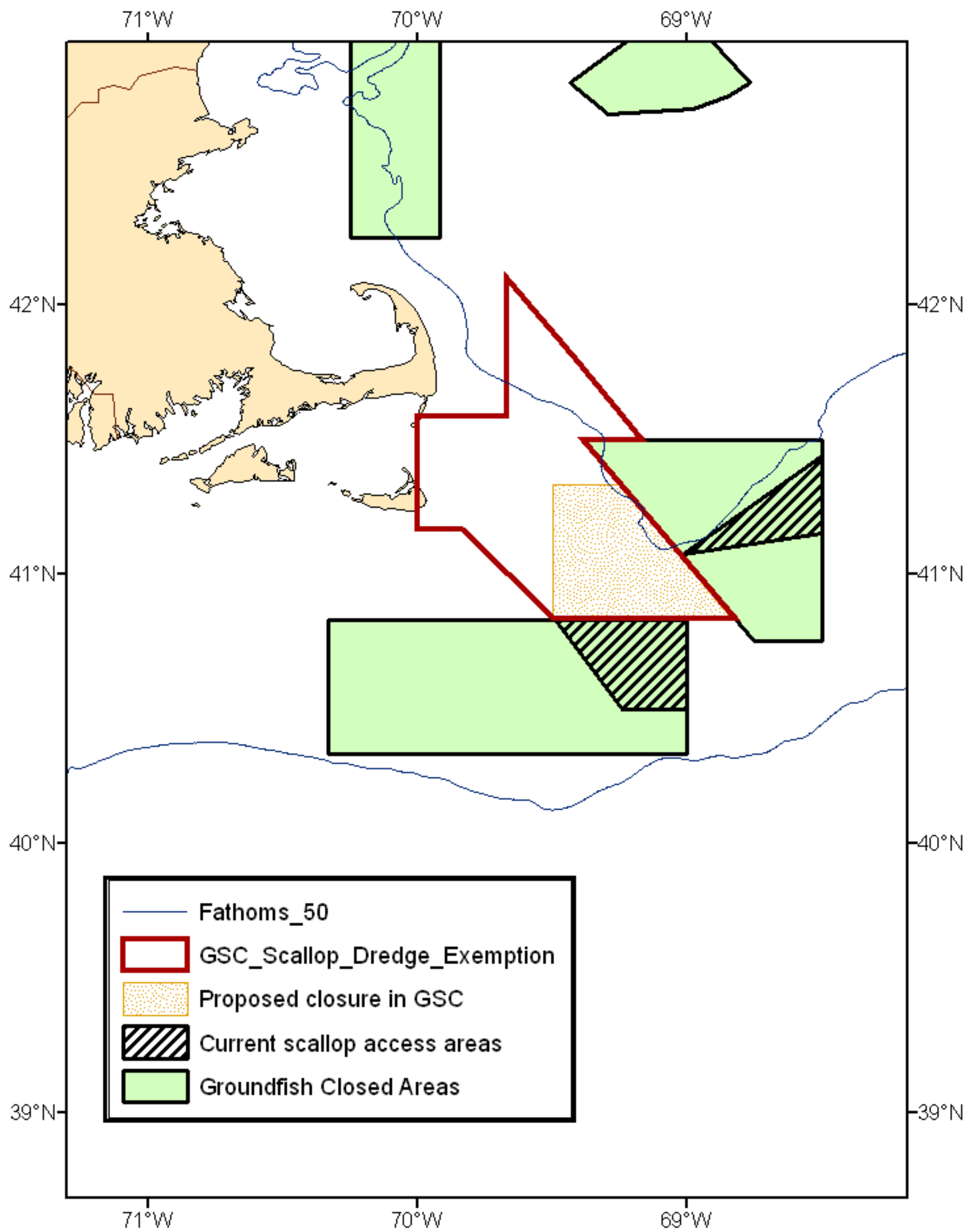
### 5.6.1 Background

The scallop fishery operates throughout the range of the scallop resource from Maine to North Carolina and results in the incidental catch of several other species. While some species are retained, other species are discarded due to restrictions in other fisheries or if the catch is not of value. Measures to minimize bycatch to the extent practicable in the scallop fishery pertain to all scallop vessels. The primary measures are the 10-inch minimum twine top restriction, and the bycatch TAC for yellowtail flounder in access areas. The 4-inch minimum ring size may also reduce finfish bycatch and reduces the bycatch of small scallops. The Northeast (NE) Multispecies and Monkfish FMPs also include measures to limit bycatch of species under the management of the specific FMP. The following measures in the FMPs apply:

The Northeast Multispecies FMP prohibits fishing in the Gulf of Maine/Georges Bank (GOM/GB) and Southern New England Exemption Areas unless a vessel is using exempted gear, is fishing under NE multispecies or scallop DAS, or is fishing under an exempted fishery. The prohibition prevents fisheries from occurring that might result in bycatch that could jeopardize the goals of the NE Multispecies FMP. Exempted fishery procedures in the NE Multispecies FMP allow a proven "clean" fishery to be implemented and allowed under the NE Multispecies FMP. Currently, the general category fishery can operate in two areas of the GOM/GB Exemption Area and in a portion of the SNE Exemption Area. In all three areas, vessels are restricted to 10 ½ ft dredges and may not possess any species other than scallops.

In addition, in the Great South Channel Sea Scallop Exemption Area within the GOM/GB Exemption Area, general category scallop vessels may not fish for scallops from April through June for one sub-area (the month of June for the other sub-area) (Figure 42). This period has been identified as the peak spawning for yellowtail flounder and protects high concentrations of yellowtail flounder from a portion of the scallop fleet. Note that because the general category fishery has converted from an open access fishery into an IFQ fishery that segment of mortality on YT has been limited. Therefore, the Council is re-considering this restriction in Framework 45 to the Groundfish FMP.

**Figure 42 – Great South Channel Sea scallop exemption area (outlined in red)**



The Monkfish FMP allows vessels fishing for other species to harvest monkfish depending on the monkfish permit category, the declared fishing activity (i.e., multispecies DAS, scallop DAS, and/or monkfish DAS), the area fished, and the gear used. Unless otherwise restricted under another FMP, a vessel fishing outside of monkfish DAS, and while fishing for scallops under general category rules, is permitted to catch and retain up to 50 lb of monkfish tails per day, up to 150 lb total for the trip. This limitation prevents a scallop vessel using dredge gear from targeting monkfish and limits bycatch during scallop trips.

Other FMPs include overall quotas, state-by-state quotas, possession limits, and gear restrictions that may also reduce bycatch. The Skate and Summer Flounder/Scup/Black Sea Bass FMPs offer examples. The Skate FMP restricts possession of some species of skates and requires a permit to catch and land skate. Vessels fishing for scallops under general category rules would be restricted to the Skate FMP possession limits, limiting the impacts on skates as bycatch. Management measures for the summer flounder fishery include a state-by-state quota. When the quota is closed in a particular state, vessels can no longer land summer flounder in that state. When the quota is closed, scallop vessels from that state, fishing under general category rules, may have less incentive to fish in areas where summer flounder catch might be high since it could not be landed in the closed state.

These measures under other FMPs would continue to limit the impacts on bycatch species that are caught in the scallop fishery. Amendment 15 is not considering any measures that would affect the annual review required by the Skate FMP related to increased mortality on skates.

Amendment 15 is not expected to cause major changes in the amount or areas that scallop vessels fish from most of the alternatives under consideration. Specific measures that impact scallop fishing patterns directly that would potentially have different impacts on non-target species are generally implemented by framework action. Potential impacts on non-target species from the measures under consideration are described below.

### 5.6.2 No Action

If No Action is taken under Amendment 15 there are not expected to be any additional impacts on non-target species. The alternatives under consideration for ACLs are expected to have no impacts since they are related to increased accountability and payback type of measures for the fishery if catch limits are exceeded. In fact, because this action includes specific AMs if the scallop fishery exceeds their allocation of yellowtail, there are potentially beneficial impacts on yellowtail flounder and other species if those measures are selected. In general, AMs can cause shifts in fishing that are difficult to predict, thus the impacts on non-target species are uncertain, but overall impacts of AM measures are neutral to positive.

In general, the stacking and leasing alternatives under consideration are expected to have neutral impacts on non-target species so long as more effort is not shifted into areas with higher bycatch rates. Overall effort shifts are not expected from stacking and leasing alone since the level of stacking and leasing is expected to occur within businesses that are in multi-vessel businesses already. It is impossible to predict exactly which vessels will decide to participate in stacking and leasing, but overall there is no reason to believe that overall effort levels by area will change that much.

Taking no action on the alternative to revise the overfishing definition is not expected to have direct impacts on non-target species.

None of the measures under consideration for adjustments to the general category management program are expected to have direct impacts on non-target species, so if No Action is taken related to these there would be no impacts on non-target species.

No Action on the measure to address EFH closed areas would not have direct impacts on non-target species; however, having both Amendment 10 and Amendment 13 EFH boundaries apply to the scallop fishery prevents allocating scallop access into areas with the highest catch rates and reduces the benefits of area rotation. If no action is taken for this alternative, effort is shifted into areas with lower scallop catch rates, increasing area swept and potentially having negative impacts on the environment including non-target species. If more open area DAS are allocated to compensate for losses of yield in Closed Area I for example, some of those days could be fished in areas with higher potential impacts on non-target species because area swept in open areas is generally higher than in access areas.

If no action is taken on the measures to improve the research set-aside program, there would be no impacts on non-target species.

Lastly, if no action is taken on changing the scallop fishing year there are no expected impacts on non-target species.

### 5.6.3 Measures to address compliance with re-authorized Magnuson-Stevens Fishery Conservation and Management Act (MSA)

The majority of measures under consideration for this section have no direct impacts on non-target species. Within this section there are alternatives for accountability measures (AMs) for the scallop fishery and for a sub-ACL of YT flounder. Overall, if mortality on scallops is higher than expected and ACLs are exceeded, AMs will be implemented to correct that. That reduced effort will have beneficial impacts on non-target species. In addition, the AMs under consideration for YT flounder should have beneficial impacts on YT since they will limit effort if the scallop fishery exceeds prescribed levels of YT bycatch. Effort shifts are expected with all of the YT AMs under consideration, and effort shifts can have negative consequences on some bycatch species if effort is moved into areas with higher bycatch rates. For example, if the scallop fishery is restricted on GB because they have exceeded the GB allocation of YT, effort may increase in SNE/MA, having higher impacts on species in that area.

### 5.6.4 Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource

**No Action**

If this alternative is selected, then no additional measures would be implemented to reduce capacity in the limited access scallop fishery. All current restrictions would remain in place. No impacts on non-target species are expected from No action.

#### 5.6.4.1 Permit Stacking and leasing

This group of alternatives would allow a single limited access vessel to have two limited access scallop permits on one vessel. In general, the stacking and leasing alternatives under consideration are expected to have neutral impacts on non-target species so long as more effort is not shifted into higher bycatch areas as a result of stacking and leasing. Overall effort shifts are not expected from stacking and leasing alone since the level of stacking and leasing is expected to occur within businesses that are in multi-vessel businesses already.

There are fishing power adjustment alternatives under consideration that would reduce the DAS allocated to a permit that is stacked onto another vessel. This reduction will decrease the total amount of DAS allocated to the fishery, but effort on vessels that stack is expected to be more efficient. So while fewer DAS will be available to the fishery, the overall level of effort or time gear is on the bottom is expected to be similar. With more DAS on one platform the vessels will have more flexibility and it is expected they will be more efficient – so overall catch per DAS will be higher. Overall LPUE will be higher per DAS, but that platform will have fewer DAS than two separate vessels, so potential impacts on non-target species from these measures alone are expected to be neutral.

In terms of access area effort, if stacking and leasing leads to more efficient fishing in access areas and therefore less time gear is on the bottom, there could be potentially beneficial impacts on non-target species. More efficient fishing in access areas with a possession limit reduces bottom time overall, but more efficient fishing in open areas does not necessarily reduce bottom time because those vessels are not limited by a possession limit. Specifically, larger, more powerful vessels can pull gear through the water faster and more efficient crews can shuck faster, so with no possession limit those factors could increase time gear is on the bottom. Overall, if the fishing power adjustments are sufficient to prevent potential increases in catch (or bottom time), then there are no additional impacts expected on non-target species. Selecting a higher percentage for the mortality adjustment would reduce potential risks of increased catch (and increased bottom time), but would have more impacts on the vessels that lease/stack.

The other sub-alternatives related to stacking and leasing are not expected to have impacts on non-target species.

### 5.6.5 Measures to adjust specific aspects of FMP to make overall program more effective

This section contains alternatives for various measures that are already in place. The topics include adjustments to the overfishing definition, modifications to the limited access general category program, revision of the EFH closed areas if Phase II to the Habitat Omnibus Amendment is delayed, improvements to the research set-aside program, and changing the fishing year.

#### 5.6.5.1 Measures to adjust the current overfishing definition (OFD)

The alternatives to revise the overfishing definition are not expected to have direct impacts on non-target species.

#### 5.6.5.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the general category fishery. The IFQ rollover provision should not have any impacts on non-target species. As for the possession limit alternatives, since the fishery is managed under an IFQ increasing the possession limit or removing it should not have direct impacts on non-target species. The alternative under consideration to increase the maximum quota one vessel can fish from 2% to 2.5% of the total general category allocation is not expected to have direct impacts on non-target species.

The alternative that would allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to another LAGC IFQ permit holder or CFA holder while retaining the permit itself should not have direct impacts on non-target species. These vessels were not likely to use their scallop IFQ so transferring it to another vessel is for economic reasons, and should not affect fishing behavior. It may move IFQ from vessels that would not have necessarily harvested their full IFQ, but projections are based on all general category IFQ being fished, there is no assumed level of non-harvest.

The alternative that would implement community fishing associations is not expected to have direct impacts on non-target species because the fishery is managed by an overall IFQ.

#### 5.6.5.3 Measures to address EFH closed areas if the EFH Omnibus Amendment 2 is delayed

This alternative would consider making the EFH closed areas consistent under both the scallop and multispecies FMPs if the EFH Omnibus Amendment 2 timeline is delayed. If selected, only the areas closed for EFH under Amendment 13 would be closed to scallop gear; the areas closed for EFH under Amendment 10 would be eliminated.

Having both sets of EFH areas closed to scallop gear for the last several years has affected where scallop effort is allocated. Overall, more open area DAS have been allocated than the plan would have done if there were not constraints on access areas within GB closed areas (primarily because the boundaries in Closed Area I have prevented allocating scallop access in that area). The scallop resource available in the remaining "sliver" of Closed Area I has not been sufficient to allocate an access area trip in that area. As a result, additional open area DAS have been allocated to meet fishing targets, which puts effort in areas with lower catch rates. Open area fishing has increased bottom time, so if this alternative is selected and more effort is allocated in access areas, bottom time should be lower having beneficial impacts on non-target species.

#### 5.6.5.4 Measures to improve research set-aside program

The measures to improve the research set-aside program are designed to improve the timing and administration of the program. Arguably, if the program can be more streamlined and worthwhile projects can occur with fewer obstacles, better and more timely research will result, having indirect positive benefits on non-target species since research on that topic is a high priority.

There is an alternative that would include a list of the measures from which research projects may be exempt. A researcher would not need to apply for an experimental fishing permit if the project wanted to be exempt from the following restrictions:

- Crew restrictions
- Seasonal closures in access areas
- Requirement to return to port if fishing in more than one area

Eliminating the crew restriction on research trips is not expected to have impacts on non-target species so long as compensation for research trips does not harvest smaller scallops with additional crew (more bottom time for same poundage if scallops are smaller). The intent of eliminating the crew restriction on research trips is to enable more researchers onboard, so the likelihood of researchers shucking scallops to be landed as compensation is minimal. Therefore, the impacts of eliminating the crew restriction for research trips and research compensation trips is not expected to have impacts on non-target species.

Allowing research trips access in Elephant Trunk during the seasonal closure of September 1-October 31 would not likely have impacts on non-target species. Similarly, eliminating the requirement to return to port if fishing in more than one area on a research trip should not have any impacts on non-target species.

#### 5.6.5.5 Measures to change the scallop fishing year

The scallop fishing year is out of sync with the framework adjustment process and the timing of when the scallop survey data become available for analysis, so this action is proposing changing the fishing year to May 1 from March 1. This alternative should not have any direct impacts on non-target species. The alternative that sets measures for a third year could have indirect beneficial impacts by allocating the fishery access to areas that are more likely to have higher catch per unit of effort, compared to rolling over previous measures under the No Action if subsequent actions are delayed.

## 5.7 IMPACTS ON OTHER FISHERIES

### 5.7.1 No Action

If No Action is taken under Amendment 15 there are not expected to be any additional impacts on other fisheries since vessels will likely continue fishing has they have been. The alternatives under consideration for ACLs are expected to have no impacts since they are related to increased accountability and payback type of measures for the fishery if catch limits are exceeded. No Action for the measures to address excess capacity (stacking and leasing), should have neutral impacts on other fisheries. However, there is already a significant amount of latent effort in the limited access scallop fishery at the current allocation levels for open area DAS and access area trips. For example, total DAS-used for an average FT vessel is estimated to be below 70 days for 2010 fishing year, providing ample opportunity for these vessels to engage in other fisheries (Table 135). Therefore, even under no action alternative, it is possible for some vessels to increase their participation in other fisheries if there is a significant change in market conditions and in factors that affect profitability of scallop fishery relative to other fisheries. At the current market prices for scallops and high profitability of the scallop fishery it is unlikely, however, for an effort increase in other fisheries.

Taking no action on the alternative to revise the overfishing definition is not expected to have direct impacts on other fisheries. If No Action is taken on any of the measures under consideration for adjustments to the general category management program, no direct impacts are expected on other fisheries.

No Action on the measure to address EFH closed areas would not have direct impacts on other fisheries; however, having both Amendment 10 and Amendment 13 EFH boundaries apply to the scallop fishery prevents allocating scallop access into areas with the highest catch rates and reduces the benefits of area rotation. If no action is taken for this alternative, effort is shifted into areas with lower scallop catch rates, increasing area swept and potentially time it takes to harvest scallops. More time spent scalloping arguably reduces time those same vessels could pursue other fisheries, but this difference is not expected to be very substantial.

If no action is taken on the measures to improve the research set-aside program, other fisheries would not be impacted. Lastly, if no action is taken on changing the scallop fishing year there are no expected impacts on other fisheries.

### 5.7.2 Compliance with re-authorized Magnuson-Stevens conservation and management act (MSA)

The majority of measures under consideration for this section have no direct impacts on other fisheries. Within this section there are alternatives for accountability measures (AMs) for the scallop fishery and for a sub-ACL of YT flounder. AMs that reduce future scallop allocations could give vessels more time to fish in other fisheries, but not substantially more than recent trends. Overall landings and revenue from other fisheries has not been substantial in recent years, and minor reductions in DAS or seasonal closures from a few of the YT AM alternatives are not expected cause significant increases in effort in other fisheries.

### 5.7.3 Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource

#### 5.7.3.1 No Action

If this alternative is selected, then no additional measures would be implemented to reduce capacity in the limited access scallop fishery. All current restrictions would remain in place. Nevertheless, there is already a significant amount of latent effort in the limited access scallop fishery at the current allocation levels for open area DAS and access area trips as discussed in the following section. For example, total DAS-used for an average FT vessel is estimated to be below 70 days for 2010 fishing year, providing ample opportunity for the limited access vessels to engage in other fisheries (Table 135). As a result, even under no action alternative, it is possible for some vessels to increase their participation in other fisheries if there is a significant change in market conditions and in factors that affect profitability of scallop fishery relative to other fisheries.

#### 5.7.3.2 Permit stacking and leasing

In very general terms, permit stacking is expected to have neutral or even positive impacts on other fisheries because vessels that participate in stacking will have less time to potentially prosecute other fisheries, a single platform will likely be more profitable with two scallop allocations reducing incentive to target other fisheries, and when permits stack any duplicate permits cancel. Therefore, overall permits in other fisheries are likely to decline as a result of permit stacking. This is illustrated in Table 134 which shows the theoretical changes in vessel numbers under complete consolidation (2 permits for every one vessel). However, if de-stacking is approved and the Council decides to allow permits in other fisheries to be held dormant while the scallop permits are stacked, but enable those permits in other fisheries to again become active when the scallop permits de-stack, overall impacts would be neutral in this case since those permits exist now. Compared to stacking, permit leasing could have potential negative impacts on other fisheries if a vessel leases out its scallop allocation and increases effort in other fisheries. However, as it is noted below, impacts are expected to be marginal because effort levels are low now even with relatively low annual scallop allocations, and some fisheries have limits that would prevent large increases in effort by vessels that have not previously participated in that fishery. The ultimate impacts of leasing on other fisheries are uncertain and greatly depend on the level of leasing that would occur if adopted, as well as the level of potential latent effort that exists in the fishery.

Because most limited access vessels have permits in and derive an income from other fisheries, there is a concern that leasing under Amendment 15 could lead to higher activity in those fisheries as some vessels cease participating in the scallop fishery by either leasing their allocations or transferring them to other vessels through permit stacking. Indeed, the number of vessels that are presently active in the scallop fishery could decline by as much as 50% under a maximum consolidation scenario from 347 vessels (2010 fishing year) to 174 vessels after consolidation. Assuming that 95% of these vessels have permits in other fisheries, total number of vessels that exit scallop fishery and could target other fisheries could increase to 165 vessels, or 155 FT equivalent vessels. On the other hand, permit stacking/leasing will reduce the number of vessels by the same amount because those vessels that bought/leased permits and doubled their allocations will have much less time to participate in other fisheries. This could offset the increase in effort in other fisheries depending on the impacts of stacking/leasing on total DAS-used in the scallop fishery.

This is illustrated in Table 135 using 2010 allocations as an example. Presently, FT vessels are allocated 38 open area days and 4 access trips and part-time vessels are allocated 15 open area days and 2 access trips. Using an average trip length of 7.25 days, total access area DAS-used per FT vessel is estimated to be 29 days and per part-time vessel 14.5 says. As a result, total DAS-used is estimated to be 67 days for an average full-time vessel and about 30 days for an average part-time vessel. This indicates that the limited access vessels have already excess days that they can direct to other fisheries, even for smaller vessels that have longer access area trips.

After stacking/leasing, however, total DAS-used for those vessels that remain in the scallop fishery would increase to 128 days for FT vessels and to 58 days for PT vessels assuming that total days used will decline by about 5% , or by 989 days, due to FPA and/or mortality adjustments and increase in efficiency. If we assume that 95% of these days (assuming the highest proportion of permits in other fisheries) belong to the FT limited access vessels, this increase in DAS (989*0.95=939) would translate into 7 more FT vessels using 128 days in other fisheries under a maximum consolidation scenario. Therefore, effort in other fisheries could possibly increase because of the leasing/stacking alternatives as the total DAS-used and the number of active vessels in the scallop fishery decline.

The net result on the effort in other fisheries depends on two counteracting factors. The first factor is that the current activity of the limited access vessels in the scallop fishery are quite limited, less than 80 days (even assuming 10 day access area trips) because of the restrictions on open area DAS and access area trip allocations. Therefore, there is already a lot of room for these vessels to participate in other fisheries, even under no action scenario, if they choose to do so. With stacking or permit leasing, as the DAS and access area trip allocations are doubled on half of the fleet (assuming a maximum consolidation scenario), the availability to participate in other fisheries for half of the fleet will decline, but the other half will be freed and could to be used solely targeting other fisheries. For example, an owner that has two boats using each half of the year in the scallop fishery and half of the year in squid fishery, after leasing can use one boat for fishing in the scallop fishery alone and the other boat solely for the squid fishery. As long as total DAS used targeting other fisheries with one boat does not exceed the previous effort level using two boats, there might be very little change in effort in other fisheries if the vessels are already used in multiple fisheries.

The second factor has to do with the potential decline in total DAS used in the scallop fishery leading to more effort in other fisheries especially if dedicating one boat solely for one fishery provides extra incentive to increase effort. As pointed out by some members of the fishing industry, vessels could re-rig and fish for other species they have permits for but have not fished for.  It was also pointed out that some vessels that lease out scallop effort may shift into other fisheries just to get history in those fisheries. If this happens, leasing could lead to some excess capacity in other fisheries where the effort is regulated by annual and seasonal quotas.  The fisheries like black sea bass, dogfish, summer flounder, scup, butterfish and possibly squid (more Illex than Loligo) are the fisheries in which effort is closest to capacity and thus might be impacted by a shift caused by leasing/stacking.  The major factor that would encourage some vessels to participate in other fisheries is the profitability of scallop and the other fisheries, however.  As discussed above, effort could increase even under no action conditions if there is an increase in the profitability in those fisheries that scallop vessels participate in varying degrees. Therefore, it is uncertain to what extent permit stacking/leasing could lead to increased effort in other fisheries compared to the no action.  If the effort is directed to other fisheries, there will be negative economic impacts on the current participants of those fisheries. However, the economic impacts on the scallop vessels that lease or stack permits and target other species will be positive.

**Table 134. Number of vessels with limited access permits in the scallop fishery before and after consolidation**

| Permit category | Number of vessels in 2009-2010 fishing years | Number of vessels after stacking (maximum consolidation | Number of vessels exiting scallop fishery and have permits in other fisheries |
|---|---|---|---|
| Full-time (cat=2) | 250 | 125 | 119 |
| Part-time (cat=3) | 2 | 1 | 1 |
| Full-time small dredge (Cat=5) | 52 | 26 | 25 |
| Part-time small dredge (cat=6) | 32 | 16 | 15 |
| Full-time net (cat=7) | 11 | 6 | 5 |
| Grand Total | 347 | 174 | 165 |

**Table 135. DAS-used before and after stacking/leasing**

| | DAS-used by vessel in 2010 | | | |
|---|---|---|---|---|
| Permit category | 2010 DAS-used-open | Total access area DAS-used (7.25*number of trips) | Total DAS used per vessel | Total DAS –used by the limited access fleet |
| Full-time (cat=2) | 38 | 29 | 67 | 16750 |
| Part-time (cat=3) | 15 | 14.5 | 29.5 | 59 |
| Full-time small dredge (Cat=5) | 38 | 29 | 67 | 3484 |
| Part-time small dredge (cat=6) | 15 | 14.5 | 29.5 | 944 |
| Full-time net (cat=7) | 38 | 29 | 67 | 737 |
| **Grand Total** | | | | **21974** |
| | After Leasing/Permit Stacking | | | |
| Permit category | 2010 DAS-used-open | Total access area DAS-used | Total DAS used per vessel | Total DAS –used by the limited access fleet |
| Full-time (cat=2) | 73 | 55 | 128 | 15996 |
| Part-time (cat=3) | 29 | 28 | 56 | 56 |
| Full-time small dredge (Cat=5) | 73 | 55 | 128 | 3327 |
| Part-time small dredge (cat=6) | 29 | 28 | 56 | 902 |
| Full-time net (cat=7) | 73 | 55 | 128 | 704 |
| Grand Total | | | | 20985 |
| Decline in DAS-used in Scallop fishery | | | | 989 |
| % Decline in DAS-used | | | | 5% |

Table 136 includes revenues from other fisheries for the full-time vessels which totaled more than $400,000 in any given year, and for the part-time vessels it includes revenues which totaled more than $100,000 in any given year. Yellowtail and monkfish revenues included even when they were small compared to revenues from other fisheries. This table indicates that revenues from other fisheries constituted less than 1% of the total revenue by the full-time fleet. For the part-time fleet, however, other important sources of revenue were summer flounder (7% to 15% of total in 2005-2009), shrimp, menhaden, and squid in 2009 fishing year.

Table 137 shows the percentage of revenue earned from each of these other fisheries by the limited access full-time and part-time vessels. The share of full-time scallop vessels in total monkfish, summer flounder and squid fishery revenues were 4% or more during 2005-2008. Part-time fleet had a share of 3% or more in summer flounder, scup and sea bass fisheries during the same time period.

The majority of sub-alternatives related to stacking and leasing are not expected to have impacts on other fisheries.

**Table 136. Composition of Revenue for the Limited Access vessels**

| Permit type | All Species | | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 (YTD) |
|---|---|---|---|---|---|---|---|---|
| FULL-TIME | Sea Scallops | Value | 345,708,369 | 307,792,971 | 343,366,447 | 316,497,595 | 322,467,793 | 132,170,210 |
| | | % of total | 97.4% | 97.5% | 97.2% | 97.2% | 97.9% | 98.1% |
| | Monkfish | Value | 2,240,078 | 2,038,301 | 3,714,976 | 2,481,260 | 1,677,261 | 406,821 |
| | | % of total | 0.6% | 0.6% | 1.1% | 0.8% | 0.5% | 0.3% |
| | Yellowtail | Value | 148,212 | 6,331 | 47,066 | 51,131 | 52,995 | 30,529 |
| | | % of total | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Summer flounder | Value | 1,791,436 | 1,966,539 | 996,734 | 1,352,661 | 1,185,205 | 460,046 |
| | | % of total | 0.5% | 0.6% | 0.3% | 0.4% | 0.4% | 0.3% |
| | Squid (Loligo) | Value | 1,339,105 | 1,472,007 | 1,726,287 | 1,432,213 | 1,053,330 | 180,390 |
| | | % of total | 0.4% | 0.5% | 0.5% | 0.4% | 0.3% | 0.1% |
| | Sea Bass (black) | Value | 418,366 | 229,858 | 314,969 | 350,186 | 351,128 | 261,610 |
| | | % of total | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.2% |
| | Haddock | Value | 406,924 | 272,657 | 358,516 | 599,053 | 444,602 | 459,932 |
| | | % of total | 0.1% | 0.1% | 0.1% | 0.2% | 0.1% | 0.3% |
| | Lobster | Value | 276,225 | 300,267 | 268,212 | 264,685 | 497,084 | 108,050 |
| | | % of total | 0.1% | 0.1% | 0.1% | 0.1% | 0.2% | 0.1% |
| PART-TIME | Sea Scallops | Value | 14,335,969 | 10,072,123 | 12,128,286 | 10,954,792 | 10,181,736 | 6,333,480 |
| | | % of total | 82% | 71% | 77% | 84% | 78% | 89% |
| | Summer Flounder | Value | 1,588,704 | 2,202,178 | 1,226,856 | 756,502 | 977,016 | 408,203 |
| | | % of total | 9% | 15% | 8% | 6% | 7% | 6% |
| | Shrimp (Brown) | Value | 1,453 | 155,256 | 63,547 | . | 449,583 | . |
| | | % of total | 0% | 1% | 0% | 0% | 3% | 0% |
| | Menhaden | Value | . | 96,334 | 74,615 | 107,390 | 444,117 | . |
| | | % of total | 0% | 1% | 0% | 1% | 3% | 0% |
| | Squid (Loligo) | Value | 604,024 | 370,924 | 421,506 | 279,880 | 230,273 | 28,794 |
| | | % of total | 3% | 3% | 3% | 2% | 2% | 0% |
| | Squid (Illex) | Value | 48,438 | 19,916 | 67,855 | 311,729 | 239,886 | . |
| | | % of total | 0% | 0% | 0% | 2% | 2% | 0% |
| | Other Shellfish | Value | . | 188,639 | 852,908 | . | 114,221 | . |
| | | % of total | 0% | 1% | 5% | 0% | 1% | 0% |
| | Monkfish | Value | 71,056 | 94,976 | 96,534 | 79,557 | 47,495 | 17,903 |
| | | % of total | 0% | 1% | 1% | 1% | 0% | 0% |
| | Yellowtail | Value | 14,415 | 732 | 152,142 | 256 | 79 | 97 |
| | | % of total | 0% | 0% | 1% | 0% | 0% | 0% |

**Table 137. Revenue from other fisheries by limited access vessels as a percentage of total revenue from that fishery**

| Other fisheries | Permit | | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| **Monkfish** | Total fishery revenue | Value | 42,252,278 | 33,458,992 | 28,819,653 | 24,563,651 |
| | Full-time | % of total | 5% | 6% | 13% | 10% |
| | Part-time | % of total | 0.2% | 0.3% | 0.3% | 0.3% |
| **Yellowtail Flounder** | Total fishery revenue | Value | 10,631,665 | 7,105,935 | 7,216,080 | 5,437,264 |
| | Full-time | % of total | 1% | 0% | 1% | 1% |
| | Part-time | % of total | 0.1% | 0.0% | 2.1% | 0.0% |
| **Summer Flounder** | Total fishery revenue | Value | 30,118,259 | 28,643,391 | 24,125,601 | 22,164,328 |
| | Full-time | % of total | 6% | 7% | 4% | 6% |
| | Part-time | % of total | 5% | 8% | 5% | 3% |
| **Shrimp (Brown)** | Total fishery revenue | Value | 156,025,654 | 181,510,196 | 180,710,196 | 155,114,005 |
| | Full-time | % of total | NA | NA | NA | NA |
| | Part-time | % of total | 0.0% | 0.1% | 0.0% | 0.0% |
| **Menhaden** | Total fishery revenue | Value | 62,519,721 | 69,682,661 | 93,098,638 | 88,766,700 |
| | Full-time | % of total | 0.0% | 0.0% | 0.0% | 0.0% |
| | Part-time | % of total | 0.0% | 0.0% | 0.0% | 0.0% |
| **Squid (Loligo)** | Total fishery revenue | Value | 28,766,828 | 27,703,213 | 9,810,398 | 6,907,218 |
| | Full-time | % of total | 5% | 5% | 18% | 21% |
| | Part-time | % of total | 2% | 1% | 4% | 4% |
| **Scup** | Total fishery revenue | Value | 7,351,491 | 8,221,718 | 9,997,474 | 6,162,392 |
| | Full-time | % of total | 2% | 1% | 2% | 6% |
| | Part-time | % of total | 4% | 3% | 3% | 2% |
| **Sea Bass (Black)** | Total fishery revenue | Value | 7,929,257 | 8,807,189 | 7,542,616 | 5,920,736 |
| | Full-time | % of total | 5% | 3% | 4% | 6% |
| | Part-time | % of total | 2% | 3% | 3% | 2% |

Note: Total fishery value for each species is obtained from NMFS website, commercial fisheries at http://www.st.nmfs.noaa.gov/pls/webpls/FT_HELP.SPECIES. Latest year available was 2008.

### 5.7.4 Measures to adjust specific aspects of FMP to make overall program more effective

This section contains alternatives for various measures that are already in place. The topics include adjustments to the overfishing definition, modifications to the limited access general category program, revision of the EFH closed areas if Phase II to the Habitat Omnibus Amendment is delayed, improvements to the research set-aside program, and changing the fishing year.

#### 5.7.4.1 Measures to adjust the current overfishing definition (OFD)

The alternatives to revise the overfishing definition are not expected to have direct impacts on other fisheries.

#### 5.7.4.2 Minor adjustments to the limited access general category management program

These alternatives include several potential modifications to the general category fishery. The IFQ rollover provision should not have any impacts on other fisheries. As for the possession limit alternatives, increasing the possession limit or removing would likely reduce the days used by these vessels to land their IFQ. It is uncertain, however, to what extent the reduction in general category effort in scallop fishery could lead to an increase in effort in other fisheries. Because many general category vessels have relatively small IFQ amounts and the availability of annual days to participate in other fisheries is not constrained significantly by their activity in the scallop fishery (Table 138). Therefore, for these vessels, an increase in the possession limit would probably not have any significant impact in other fisheries. But for the large IFQ holders, reducing possession limit could free some time to be used fishing for other species. Most of the GC vessels participate in fisheries like Multispecies, Monkfish and Lobster fisheries which are managed by individual DAS, sectors and other measures limiting the effort of the individual vessels, so a potential increase in effort in those fisheries are unlikely (Table 80). On the other hand, some vessels participate in fisheries such as summer flounder, skates, scup, squid (Loligo), and silver hake, or in fisheries managed by annual and/or seasonal quotas. As a result, a decline in DAS-used due to the increase in the possession limit for general category fishing could lead to some increase in effort in those fisheries with some negative impacts on the current participants although it is uncertain if these impacts will be more than marginal.

The alternative under consideration to increase the maximum quota one vessel can fish from 2% to 2.5% of the total general category allocation is not expected to have substantial impacts on other fisheries. For example, if a owner currently has 5% of the total general category IFQ split on three vessels (2% on one, 2% on a second vessel and 0.5% on a third vessel) he could consolidate his scallop quota on two vessels leaving one vessel to potentially pursue other fisheries exclusively. Arguably, the more scallop quota on one vessel, the less time that vessel would have to target other species. On the other hand, a vessel that relinquishes all of its scallop quota could spend more time fishing for other species. Ultimately however, the vast majority of IFQ permit holders received a relatively small allocation of scallop quota, so they already have most of the year to fish for other species they have permits for. Therefore, this change is likely marginal and is not expected to impact other fisheries in any substantial way.

**Table 138 – Summary of IFQ permit holders by allocation range for 2010 (LAGC only and LA with LAGC)**

| Allocation Range (lb) for IFQ-only vessels | # Permits | % |
|---|---|---|
| 500-2,000 | 112 | 35% |
| 2,001-5,000 | 66 | 20% |
| 5,001-10,000 | 59 | 18% |
| 10,001-15,000 | 35 | 11% |
| 15,001-20,000 | 21 | 7% |
| 20,001-25,000 | 10 | 3% |
| 25,001-30,000 | 12 | 4% |
| 30,001-36,000 | 7 | 2% |

| Range (lb) for LA vessels with IFQ | # Permits | % |
|---|---|---|
| 500-2,000 | 20 | 50% |
| 2,001-5,000 | 8 | 20% |
| 5,001-10,000 | 4 | 10% |
| 10,001-15,000 | 3 | 8% |
| 15,001-20,000 | 3 | 8% |
| 20,001-25,000 | 0 | 0% |
| 25,001-30,000 | 1 | 3% |
| 30,001-35,000 | 0 | 0% |
| 35,001-40,000 | 1 | 3% |

The alternative that would allow LAGC IFQ permit owners to permanently transfer some or all of their quota allocation independent of their IFQ permit to another LAGC IFQ permit holder or CFA holder while retaining the permit itself is not expected have substantial impacts on other fisheries. Under No Action LAGC vessels have to sell all their permits as a package since there is no permit splitting, so if quota is allowed to be separated from a LAGC permit more permanent transfers may occur because it will not be as costly. However, these vessels were not likely to use their scallop IFQ so transferring it to another vessel is for economic reasons, and therefore, transferring their quota to other participants should not affect fishing behavior or other fisheries in any significant way. Similarly, the alternative that would implement community fishing associations is not expected to have impacts on other fisheries in the absence of a change in possession limit and fishing time.

#### 5.7.4.3 Measures to address EFH closed areas if the EFH Omnibus Amendment 2 is delayed

This alternative would consider making the EFH closed areas consistent under both the scallop and multispecies FMPs if the EFH Omnibus Amendment 2 timeline is delayed. If selected, only the areas closed for EFH under Amendment 13 would be closed to scallop gear; the areas closed for EFH under Amendment 10 would be eliminated.

Having both sets of EFH areas closed to scallop gear for the last several years has affected where scallop effort is allocated. Overall, more open area DAS have been allocated than the plan would have done if there were not constraints on access areas within GB closed areas (primarily because the boundaries in Closed Area I have prevented allocating scallop access in that area). The scallop resource available in the remaining "sliver" of Closed Area I has not been sufficient to allocate an access area trip in that area. As a result, additional open area DAS have been allocated to meet fishing targets, which puts effort in areas with lower catch rates. These additional DAS are potentially days that these vessels are unable to spend targeting other species, but again the magnitude of days is not large and if vessels were going to target other species this small difference is not likely the reason they will decide to. For example, most full-time limited access scallop vessels are fishing less than 100 days a year, so already have over 250 days to potentially fish for other species. If a few extra days are allocated because access is limited on GB due to habitat closed areas, the difference between 250 days the vessel is not scalloping and 255 may not impact the amount of time that vessel decides to pursue other fisheries.

#### 5.7.4.4 Measures to improve research set-aside program

The measures to improve the research set-aside program are designed to improve the timing and administration of the program. None of these alternatives are expected to have direct impacts on other fisheries. A handful of vessels that participate in research may have less time to pursue other fisheries, but that represents a relatively small number of vessels on limited trips.

#### 5.7.4.5 Measures to change the scallop fishing year

The scallop fishing year is out of sync with the framework adjustment process and the timing of when the scallop survey data become available for analysis, so this action is proposing changing the fishing year to May 1 from March 1. This alternative should not have any direct impacts on other fisheries. The alternative that sets measures for a third year could have indirect beneficial impacts by allocating the fishery access to areas that are more likely to have higher catch per unit of effort, compared to rolling over previous measures under the No Action if subsequent actions are delayed.

## 5.8 CUMULATIVE EFFECTS

### 5.8.1 Introduction

The term "cumulative effects" is defined in the Council of Environmental Quality's (CEQ) regulations in 40 CFR Part 1508.7 as:

"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

In 1997, the CEQ published a handbook titled, *Considering Cumulative Effects Under the National Environmental Policy Act*. The CEQ identified the following eight principles of cumulative effects analysis, which should be considered in the discussion of the cumulative effects of the proposed action:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.
6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.
7. Cumulative effects may last for many years beyond the life of the action that caused the effects.
8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accumulate additional effects, based on its own time and space parameters.

The following analysis will identify and characterize the impact on the environment by the Proposed Action and alternatives considered in Amendment 15 when analyzed in the context of other past, present, and reasonably foreseeable future actions. Summary tables can be found following each of the text sections describing impacts. These tables contain brief summaries intended to distill the more detailed descriptions found in this section, and in Section 4.0 (Affected Environment), and Section 5.0 (Environmental Impacts). To enhance clarity and maintain consistency, the terms in Table 139 are used to summarize impacts.

**Table 139 - Terms used in cumulative effects tables to summarize cumulative impacts**

| Impacts Are Known | Impacts Are Somewhat Uncertain |
|---|---|
| High Negative/Positive | Potentially High Negative/Positive |
| Negative/Positive | Potentially Negative/Positive |
| Low Negative/Positive | Potentially Low Negative/Positive |
| Neutral | Potentially Neutral |
| No Impact | |

**In some cases, terms like "more" and "most" are used for the purposes of comparing management alternatives to each other.*

### 5.8.2 Valued Ecosystem Components

This document was structured such that the cumulative effects can be readily identified by analyzing the impacts on valued ecosystem components (VECs). The affected environment is described in this document based on VECs that were identified specifically for Amendment 15. The VECs identified for consideration in Amendment 15 include: **Atlantic sea scallop resource; physical environment and essential fish habitat (EFH); protected resources; non-target species; fishery-related businesses and communities, and other fisheries**.

VECs represent the resources, areas, and human communities that may be affected by a proposed action or alternatives and by other actions that have occurred or will occur outside the proposed action. VECs are the focus of an EIS since they are the "place" where the impacts of management actions are exhibited. An analysis of impacts is performed on each VEC to assess whether the direct/indirect effects of an alternative adds to or subtracts from the effects that are already affecting the VEC from past, present and future actions outside the proposed action (i.e., cumulative effects). While the document includes a description of other potentially affected parts of the ecosystem such as bycatch and enforcement of scallop measures, these components are not included as a specific VEC for the cumulative effects. They have been described and discussed in terms of impacts, but they were not identified as primary valued ecosystem components.

Changes to the Scallop FMP have the potential to directly affect the sea scallop resource. Similarly, management actions that would alter the distribution and magnitude of fishing effort for scallops could directly or indirectly affect other species and their corresponding fisheries. The physical environment and EFH VEC focuses on habitat types vulnerable to activities related to general category scallop fishing. The protected resources VEC focuses on those protected species with a history of encounters with the scallop fishery. The fishery-related businesses and communities VEC could be affected directly or indirectly through a variety of complex economic and social relationships associated with either the scallop fishery or any of the other VECs.

The descriptive and analytic components of this document are constructed in a consistent manner. The Affected Environment (Section 4.0) traces the history of each VEC and consequently addresses the impacts of past actions. The Affected Environment section is designed to enhance the reader's understanding of the historical, current, and near-future conditions (baselines and trends) to fully understand the anticipated environmental impacts of the management action proposed in this amendment. The direct/indirect and cumulative impacts of the Proposed Action and other alternatives are then assessed in Section 0 of this document using a very similar structure to that found in the Affected Environment section. This EIS, therefore, is intended to follow each VEC through each management alternative.

### 5.8.3 Spatial and temporal boundaries

The geographic area that encompasses the biological, physical, and human community impacts to be considered in the following cumulative effects analysis is described in detail in Section 4.0 of this document. The physical range of the Atlantic sea scallop resource in the northeast region of the US is from Maine to North Carolina. The physical environment, including habitat and EFH, is bounded by the range of the Atlantic sea scallop fishery in the northeast region from Maine to North Carolina and includes adjacent upland areas (from which non-fishing impacts may originate). For Protected Species and non-target species, the geographic range is the total range of the Atlantic sea scallop fishery. The geographic range for human communities is defined to be those fishing communities bordering the range of the scallop fishery.

Overall, the temporal scope of past and present actions for scallops, the physical environment and EFH, protected species, non-target species, and fishery-related businesses and communities is focused principally on actions that have occurred since 1996, when the Magnuson-Stevens Fishery Conservation and Management Act was enacted and implemented new fisheries management and EFH requirements. In 1996, the Magnuson-Stevens Act identified sustained participation of fishing communities as a new National Standard (#8), so consideration of fishery-related businesses and communities is consistent within this temporal scope. The temporal scope for marine mammals begins in the mid-1990s, when NMFS was required to generate stock assessments for marine mammals that inhabit waters of the U.S. EEZ creating the baseline against which current stock assessments are evaluated. For turtle species, the temporal scope begins in the 1970s, when populations were noticed to be in decline.

The temporal scope for scallops is focused more on the time since the Council first submitted the Scallop FMP in 1982, and particularly since 1994 when Amendment 4 to the FMP implemented the general category scallop permit. The Scallop FMP was developed with comprehensive analysis as part of a complete EIS, which this document serves to supplement and update. The FMP has been adjusted a number of times since 1982, and many elements of the management plan that are not specifically addressed in this amendment will continue to influence the status of the sea scallop resource.

The Atlantic sea scallop fishery has a long history dating back to the late 1800s. Section 1.3 summarizes the major changes in the scallop fishery and management program since the FMP was approved in 1982. Landings information for the scallop fishery date back to the early 1900s (Serchuck et al, 1979), but the temporal scope for fishery-related businesses and communities extends back to 1994 to consider impacts from the date the general category permit was first issued.

The temporal scope of future actions for all four VECs extends several years into the future. This period was chosen because of the dynamic nature of resource management and lack of specific information on projects that may occur in the future, which make it difficult to predict impacts beyond this time frame with any certainty. In addition, most measures proposed in this action are only in place for one year only.

### 5.8.4 Past, present and reasonably foreseeable future actions

Section 4.0 of this document summarizes the current state of the scallop resource and the limited access and general category scallop fisheries, and it provides additional information about habitat and protected resources that may be affected by the Proposed Action.

#### 5.8.4.1 Past and Present actions

A summary of the impacts of past and present actions have been considered relative to the VECs in this amendment and are described below and presented in Table 141.

***Scallop Resource***

The Council established the Scallop FMP in 1982 and later implemented several Amendments and Framework Adjustments to modify the original plan. See Section 1.1 for a detailed description of past and present actions. One major action in the past (1994) includes Amendment 4, which implemented limited access for the directed scallop fishery that is primarily managed by DAS and other controls such as crew limits and gear restrictions. During that same year, large areas on Georges Bank were closed to scallop fishing because of concerns over finfish bycatch and disruption of spawning aggregations.

In 1999 Framework Adjustment 11 to the Scallop FMP allowed the first scallop fishing within portions of the Georges Bank groundfish closed areas since 1994. Since then, several other framework actions have provided controlled access in these areas. In 2004 Amendment 10 to the Scallop FMP introduced rotation area management and changed the way that the FMP allocates fishing effort for limited access scallop vessels. Instead of allocating an annual pool of DAS for limited access vessels to fish in any area, vessels had to use a portion of their total DAS allocation in the controlled access areas defined by the plan, or exchange them with another vessel to fish in a different controlled access area. Vessels could fish their open area DAS in any area that was not designated a controlled access area. The amendment also adopted several alternatives to minimize impacts on EFH, including designating EFH closed areas, which included portions of the groundfish mortality closed areas. The most recent action that provided controlled access in the access areas was Framework 18 for FY2006 and FY2007.

Several other actions have recently been implemented: Amendment 13, Framework 20, the SBRM Amendment (Amendment 12 to the Scallop FMP), and Framework 21. The Council approved Amendment 12 to the Scallop FMP in June 2007. This action is an omnibus amendment to all FMPs in the region and focuses on defining a standardized bycatch reporting methodology (SBRM). Section 303(a) (11) of the Magnuson-Stevens Fishery Conservation and Management Act requires that all FMPs include "a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery." The SBRM Omnibus Amendment will ensure that all FMPs fully comply with the Act. SBRM is the combination of sampling design, data collection procedures, and analyses used to estimate bycatch and to determine the most appropriate allocation of observers across the relevant fishery modes.

Scallop Amendment 13 was also approved by both the Council and NMFS in 2007, which re-activated the industry-funded observer program. Since 1999, vessels required to carry an observer are authorized to land more than the possession limit from trips in access areas, and in open areas, vessels are charged a reduced amount to help compensate for the cost of an observer. Observers were deployed through a contractual arrangement between National Marine Fisheries Service (NMFS) and an observer provider until June 2004. This arrangement was not renewed because of unresolved legal issues concerning the use of a contract to administer the industry-funded observer program. For some time, NMFS funded observers while a solution to this issue was investigated. As funding became insufficient, an interim rule went into effect that approved a new mechanism to use the observer set-aside funds through a non-contracted vendor. Amendment 13 was necessary to make this temporary mechanism part of the regulations. The Council selected final measures for that action at the February 2007 Council meeting and it was implemented on June 12, 2007. Amendment 13 also includes a provision to make changes to the observer set-aside program by framework action and the Council decided to address some issues raised with the current program in Framework 19.

The Council approved Framework 20 to the Scallop FMP at the June 2007 Council meeting and NMFS implemented that action afterward. Framework 20 considered measures to reduce overfishing for FY2007 through measures that were implemented by interim action earlier in the year. At the November 2006 Council meeting, the Scallop PDT informed the Council that overfishing was likely to occur in 2007 under status quo measures implemented under Framework 18. The PDT presented several alternatives to reduce fishing mortality. The Council ultimately recommended that NMFS reduce the allocated number of trips for all scallop permit categories in the Elephant Trunk Access Area (ETA), delay the opening of the ETA, and prohibit vessels from possessing more than 50 bushels of in-shell scallops when leaving any controlled access area. NMFS agreed with the Council that the ETA has an unprecedented high abundance of scallops, which needs to be husbanded with precaution to effectively preserve the long term health of the scallop resource and fishery, and so implemented these measures by interim action.[10] This interim action became effective on December 22, 2006, and remained effective until June 20, 2007 (180 days). This interim action was then extended for an additional 180 days, and expired on December 26, 2007. Therefore, for the last two months of the 2007 fishing year (January-February 2008), management would have reverted back to status quo measures under FW18. Specifically, higher trip allocations would have been granted in the Elephant Trunk Area for both limited access and general category fisheries. Therefore, the Council approved Framework 20 to extend the reduced fishing effort measures implemented by interim action through the end of the 2007 fishing year. This action expired on March 1, 2008, when Framework 19 was scheduled to be in place.

Framework 19 set specifications to adjust DAS allocations and set the area rotation schedule for 2008 and 2009. Maintaining the previous fishing mortality target of $F = 0.20$ is expected to have positive impacts on the scallop resource by reducing the risk of overfishing and establishing measures to achieve optimum yield on a continuing basis. In addition, the Hudson Canyon area was closed in this action which will help the FMP achieve optimum yield by reducing mortality on small scallops. Framework 19 also revised the overfishing definition, which was expected to have positive impacts on the scallop resource. The updated model is less biased, uses more sources of data, and is an improvement on the previous model.

It also addressed new requirements for the general category fishery including quarterly hard-TAC allocations for the transition period to an IFQ program. This action also included the details of a cost recovery program that was approved in Amendment 11 for general category IFQ permit owners. In addition, Amendment 11 approved a hard-TAC for a Northern Gulf of Maine (NGOM) limited entry program. FW19 included the specific hard-TAC for that program for the next two fishing years. General category vessels were allocated 5% of the total catch in access areas in both FY2008 and 2009 under this framework. The last alternative related to Amendment 11 was an estimate of incidental catch mortality that will be removed from the total projected catch before allocations are made.

Other measures in Framework 19 included alternatives to address specific issues with the observer set-aside program. In addition, the action included a provision for a vessel to power down their VMS unit for a minimum of 30 days. This action also included a clarification about when a vessel can leave for an access area trip. Lastly, this action approved research priorities to be incorporated in the RSA program for FY2008 and FY2009. The Council selected final measures for that action at the October 2007 Council meeting and it was implemented on June 1, 2008. The final rule for Framework 19 to the FMP was published on May 29, 2008 (73 FR 30790).

[10] The interim rule published by NMFS on December 22, 2006 (**71 FR 76945**), included all measures recommended by the Council, except the prohibition on a vessel leaving an access area with more than 50 bu. of in-shell scallop was limited to the ETA only and not all access areas as recommended by the Council.

The Council approved Amendment 11 to the Scallop FMP (June 2007) and most of it was implemented in 2008. The full IFQ program was implemented in early 2010. The main objective of the action was to control capacity and mortality in the general category scallop fishery. Since 1999, there has been considerable growth in fishing effort and landings by vessels with general category permits, primarily as a result of resource recovery and higher scallop prices. This additional effort is likely a contributing factor to why the FMP has been exceeding the fishing mortality targets. Without additional controls on the general category fishery, there is a great deal of uncertainty with respect to potential fishing mortality from this component of the scallop fishery; thus, the potential for overfishing is increased. The outcome of Amendment 11 is that mortality of the general category fleet will be controlled, thus reducing the potential for overfishing and having strong positive effects on the scallop resource.

Framework 21 was approved by the Council at the January 2010 Council meeting, and was implemented in summer 2010. It sets the fishery specifications for fishing year 2010, implements measures to comply with the RPM relating to sea turtles in the recent biological opinion (NMFS, 2008), and makes minor adjustments to the observer set-aside program. FW21 allocates 38 DAS to vessels and reduces access area trips from five to four. The selected scenario does not close the Channel so there will be higher LPUE and lower area swept in the near-term, which could positively affect the resource. In general the measures for general category vessels related to Framework 21 are expected to have positive to neutral impacts on the scallop resource.

The alternatives to comply with RPM for turtles could have a wide range of impacts on the resource depending on how fishing behavior changes in accordance with the measures. The alternatives with seasonal closures in Delmarva for September and October are potentially beneficial for the resource if effort shifts to months in which meat weights are higher because reducing effort in the area during months of lower meat yields will reduce mortality. A reduction in possession limits in either Elephant Trunk or Delmarva would also be a positive impact on the resource because lower effort levels would presumably cause an increase in stock biomass.

The alternatives to improve the observer set-aside program will not have direct impacts on the scallop resource, but could potentially have indirect positive impacts from better monitoring coverage leading to better management.

Framework 44 to the Multispecies FMP will have an impact on the scallop resource because the fishery is dependent on the allocation of yellowtail flounder needed to harvest a certain amount of scallops. According to Amendment 16 to the Multispecies FMP a specific portion of the total ABC for YT will be allocated to the scallop fishery as bycatch. If approved, Framework 44 will allocate 100% of the yellowtail that is needed to harvest the projected scallop catch for 2010. Final action on this framework was made in November 2009 and it is expected to be implemented before May 1, 2010. This action is expected to have neutral impacts on the scallop resource for 2010 since 100% of the YT projected to be needed by the scallop fishery will be allocated. However, in the future (2011 and 2012), FW44 will only allocate 90%, so less effort may be allocated to the scallop fishery in those years; unless other modifications can be made to catch the same amount of scallops and less YT. If overall scallop effort has to be reduced in future actions to prevent exceeding YT allocations, there may be indirect beneficial impacts on the scallop resource as a result of less effort overall.

The cumulative impacts of past and present management actions have resulted in substantial effort reductions in the scallop fishery. Sea scallop biomass has mostly increased since 1999, and the resource has not been overfished. It is estimated that area rotation management will end overfishing permanently and provide a healthy resource for scallop fishermen to harvest for the long-term. Overall, the realized reductions in effort from past management actions have been positive for the scallop resource.

***Physical Environment and EFH***

The effects of mobile bottom-tending gear (trawls and dredges) on fish habitat have been recently reviewed by the National Research Council (NRC 2002). This study determined that repeated use of trawls/dredges reduce the bottom habitat complexity by the loss of erect and sessile epifauna and smoothing sedimentary bedforms and bottom roughness. This activity, when repeated over the long term also results in discernable changes in benthic communities, which involve a shift from larger bodied long-lived benthic organisms for smaller shorter-lived ones. This shift also can result in loss of benthic productivity and thus biomass available for fish. Therefore, such changes in bottom structure and loss of productivity can reduce the value of the bottom habitat for demersal fish, such as haddock and cod. These effects varied with sediment type, with lower level of impact to sandy communities, where there is higher natural disturbance to a high degree of impact to hard-bottom areas such as bedrock, cobble and coarse gravel, where the substrate and attached epifauna are more stable. Use of trawls and dredges are common in inshore and offshore areas. The primary gear used in the scallop fishery is dredge gear; however, there is some otter trawl gear used in the scallop fishery. It is assumed for this analysis that the effects of bottom tending mobile gear, particularly dredge gear, are generally moderate to high, depending upon the type of bottom and the frequency of fishing activities to demersal species affected by this action. These activities, which cause impacts to essential fish habitat for a number of federally managed species in a manner that is more than minimal and less than temporary in nature, have been mitigated by the measures in Amendment 10 and by other actions described in Table 140.

Amendment 10 implemented a series of year-round closed areas to scallop gear to protect EFH in those areas. Furthermore, a gear modification (4-inch ring size) was implemented to reduce mortality on small scallops and reduce contact with the bottom. Total DAS allocated under Amendment 10 were reduced, which had indirect benefits to EFH by reducing overall scallop fishing effort and thus reducing area swept by dredge gear. It should be noted that sea scallop EFH is not considered adversely affected by dredge or otter trawl fishing effort.

Table 140 includes a description of measures implemented by the Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH.

In Amendment 13 to the Multispecies FMP the New England Council implemented a range of measures to minimize the impacts of bottom trawling in the Gulf of Maine, Georges Bank and Southern New England. In addition to the significant reductions in days-at-sea and some gear modifications (implemented through Scallop Amendment 10), the Council closed 2,811 square nautical miles (Habitat Closed Areas) to all bottom-tending mobile fishing gear, including scallop dredges. Framework 16 to the Scallop FMP/Framework 39 to the Multispecies FMP updated the Habitat Closed Area boundaries established by Amendment 10 to be consistent with those established by Amendment 13. On August 2, 2005, the portions of Framework 16/39 that modified the habitat closures to be consistent with A13 habitat closed areas were vacated by a court order. As a result, both the Amendment 10 and the Amendment 13 closures remain in effect. Table 140 includes a description of measures implemented by the Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH, including measures established under other FMPs.

Amendment 15 does not propose any changes to the current measures to minimize the adverse impacts of scallop fishing on EFH. No additional measures are needed at this time because most measures proposed in this action are expected to have neutral to positive impacts on EFH.

**Table 140 - Description of measures implemented by Council in last major FMP amendments to minimize, mitigate or avoid adverse impacts on EFH.**

| Measure | Source FMP (implemented by) | Description | Description of Habitat Impacts | Overall Habitat Impact |
|---|---|---|---|---|
| **CLOSED AREA MEASURES** | | | | |
| **Mortality Closure** | Multispecies | Retention of existing groundfish closed areas in the Gulf of Maine, George's Bank and Southern New England. Addition of Cashes as a year round closure | Year-round closures provide habitat benefits to the areas within the closures. The addition of Cashes Ledge as a year-round closure will benefit EFH. Rare kelp beds are found in that area. | + |
| **Habitat Closed Areas (MPAs)** | Multispecies and Scallop | 2811 square nautical miles closed to bottom-tending mobile gear indefinitely in five separate closed areas in GOM, GB and SNE. | Significant benefits to EFH by minimizing adverse effects of bottom trawling, scallop dredging and hydraulic clam dredging by prohibiting use. | + |
| Rotational Area Management (RAM) | Scallop | Amendment 10 implemented a rotational area management strategy which introduced a systematic structure that determines where vessels can fish and for how long. Framework adjustments will consider closure and re-opening criteria. | Expected to have positive effects on habitat because effort on gravelly sand sediment types is expected to decline. In general, swept area is expected to decline in most of the projected scenarios (especially in the Mid-Atlantic region), which could have positive impacts on EFH. | + |
| Habitat Closed Areas (MPAs) | Monkfish | Amendment 2 closed Oceanographer and Lydonia Canyons to trawls and gillnets on a monkfish DAS. | Precautionary action taken to ensure that any expansion of the monkfish fishery as a result of the other measures in Amendment 2 will not affect sensitive deep-sea canyon habitats for which EFH is designated. | + |
| **EFFORT REDUCTION MEASURES** | | | | |
| **Monkfish DAS usage by limited access permit holders in scallops and multispecies fisheries** | Monkfish | Retain current requirement for vessels to use both monkfish DAS and scallop or multispecies DAS simultaneously | This alternative relies on the scallop and multispecies management plans to set DAS levels (with the exception of when DAS fall below 40 DAS). As DAS have been reduced by management actions over the past two years, consequent impacts on habitat by the directed monkfish fishery have been reduced proportionally. Further reductions are possible depending on management actions in these two plans. | + |
| **Capacity Control** | Multispecies | DAS can be transferred with restrictions and new measures for "reserve days" | Any measure that is intended to reduce the amount of time fishing by mobile gear will likely have benefits to EFH. These measures reduce amount of latent effort as well. | + |
| **DAS Reductions** | Multispecies | Mix of adaptive and phased effort reduction strategies.<br>A days (60% of effective effort)<br>B days (40% of effective effort)<br>C days (FY01 allocation).<br>Provides opportunity to fish on stocks that do | Reducing DAS will likely benefit EFH by reducing the amount of time vessels can fish. | + |

| Measure | Source FMP (implemented by) | Description | Description of Habitat Impacts | Overall Habitat Impact |
|---|---|---|---|---|
| | | not need rebuilding. | | |
| **DAS Limits** | Scallops | Amendment 10 implemented a new program that allocates specific number of DAS for open areas and controlled access areas. | The total DAS allocation in open areas is significantly less than the Status quo DAS allocation. Less DAS translates into less fishing effort, so positive for EFH. Furthermore, CPUE in controlled access areas is expected to be greater, thus the gear is expected to spend less time on the bottom. | **+** |
| **Possession Limits** | Scallops | Reduced possession limit for limited access vessels fishing outside of scallop DAS | Vessels with limited access permits are currently allowed to possess and land up to 400 lbs per trip of shucked scallop meats when not required to use allocated DAS; this measure will reduce possession limit to 40 lbs/trip) and reduce fishing effort by vessels that have been targeting scallops under the higher general category possession limit. Scallops harvested under this provision cannot be sold. | **+** |
| **GEAR MODIFICATION MEASURES** | | | | |
| **Minimum mesh size on directed MF DAS** | Monkfish | Mobile gear vessels are required to use either 10-inch square or 12-inch diamond mesh in the codend. Gillnets must be at least 10 inches | The mesh size regulations do not have a direct effect on habitat, but may indirectly minimize adverse effects of the fishery on complex bottom types by reducing the ability to catch groundfish, and therefore the incentive to target those fish in hard bottom areas. | **+** |
| **Roller gear restriction** | Monkfish | Establishes maximum roller gear diameter size for vessels fishing on a monkfish DAS. | Positive but not significant – sets maximum roller gear diameter equivalent to size currently in use in the area; prevents expansion of trawl effort into complex bottom areas and canyons. | **+** |
| **Four inch rings** | Scallop | Increase ring size on scallop dredge rig to 4" everywhere. | Four inch rings will slightly increase dredge efficiency for larger scallops, thus reducing bottom contact time in recently-opened areas where large scallops are abundant, but will reduce catch rates and increase bottom time in areas where medium-small sized scallops are prevalent. | **-/+** |
| **OTHER MEASURES** | | | | |
| **Observer Coverage** | Multispecies | 10% requested by 2006 for each gear type | If observers are able to collect data of interest to EFH management, increased coverage could indirectly benefit habitat. | **+** |
| **TAC Set-Aside for research** | Scallop | 2% set-aside from TAC and/or DAS allocations to fund scallop and habitat research and surveys | Could indirectly benefit habitat when habitat research is funded and provides better information for future management decisions. | **+** |

***Protected Species***
Before 2001, there were only three known interactions between sea turtles and scallop dredge gear (NMFS, 2007). By 2001, scallop fishing intensity in the Mid-Atlantic region increased following a general decline of scallop biomass in the Georges Bank region and closure of the groundfish Closed Areas in December 1994. Since turtle interactions in the high use areas and seasons are in part related to fishing effort, sea turtles may have benefited from reductions of fishing effort allocations in Amendments 4 and 7 to the Scallop FMP. During this time, DAS use declined from more than 40,000 DAS in 1993 to about 23,000 DAS in 1999, before increasing to about 31,000 DAS, in 2003 (NEFMC, 2005). The amendments and intervening framework adjustments also made other management changes, including new gear restrictions, although the effect of these changes on sea turtle interactions is unknown.

The extent of interactions between fishing with scallop dredges and sea turtles is still under investigation. Following the opening of the Hudson Canyon Access Area and increased observer coverage in the area, additional interactions between sea turtles and scallop dredge gear became known. New research is continuing to identify additional gear modifications and changes in fishing that could reduce interactions in the fishery.

The main goal of Amendment 10 to the Scallop FMP was to focus scallop fishing effort in areas where biomass is greatest with the rationale that actual fishing time is likely to be reduced as the overall catch per tow increases. Scallop management areas have been monitored through annual scallop surveys for scallop biomass and growth rates. When biomass in a closed area is high and the growth rates decline (i.e. the scallop resources are at maximum levels in the area) areas open to fishing at a controlled level. Conversely, closings occur when the reverse situation occurs (low biomass and high growth rate indicating a depleted scallop resource in the area). While Scallop Amendment 11 continued this management program, its purpose was to control capacity and mortality in the general category scallop fishery.

Certain general statements can be made regarding areas in the scallop management unit. Shifts in scallop effort from the Mid-Atlantic region to areas of Georges Bank may have had the effect of reducing potential risks to sea turtles. As the Georges Bank scallop resource is reduced and the Mid-Atlantic areas rebound a reverse shift in effort from an area of low use for turtles to high use areas in the Mid-Atlantic may potentially increase the risk of interactions from current levels. Accordingly, impacts to protected species could shift back and forth over the years under the management scheme implemented under Amendment 10. Since modifications to NEFMC management actions will occur through framework adjustments and plan amendments, they will undergo additional review to assess impacts to protected species.

The sea scallop FMP has several measures in place specifically to protect sea turtles. These include time area closures such as the seasonal Elephant Trunk closure in September and October in effect since that area opened in 2007 which will roll over in the current action. Also included are gear modifications and requirements designed to minimize impact of takes. In general, scallop effort has declined over the years and catch per-unit-of-effort has increased dramatically under area rotation. Comparing 2004 to 2009, the number of total DAS allocated has declined by 39%. The average DAS allocated from 2004-2007 was 19,182, which is about

29% more than the estimate of allocated DAS for 2009. More and more effort is concentrated in access areas with higher catch rates, so gear is in the water much less than in the past.

Fishing effort in the Mid-Atlantic has changed over time. In general, total catch from the MA was very low from 1994 until more recently. From 2004-2007, about 60% of total catch from MA access areas and open areas. There is typically a peak in the spring until more recent years (2007 and 2008). The peak used to be May/June, and more recently it has shifted to April or even March. When the Elephant Trunk area was open in 2007 and 2008 more catch occurred during the early spring and later in the year compared to spring and summer in earlier years. This shift of effort, likely caused by the high amount of effort allocated to ETA and the two month turtle closure from Sept1-Oct 31) seems to have reduced scallop fishing during most of the year when turtles are expected to be in the Mid-Atlantic. Overall catch in the Mid-Atlantic has steadily reduced during both turtle seasons under consideration in FW21 from 50-60% to closer to 30% for both time periods.

Five Biological Opinions for the sea scallop fishery have been issued since 2003. The latest Biological opinion was completed by NMFS on March 14, 2008 which summarized the overall impacts to threatened and endangered species. It concluded that the fishing operations being carried out under the Scallop FMP and as modified by Framework 19 were likely to adversely affect, but not jeopardize the continued existence of loggerhead, leatherback, Kemp's ridley and green sea turtles. ESA requires incidental take statement (ITS) and any reasonable and prudent measures (RPMs) necessary to minimize impacts along with implementing terms and conditions. One specific RPM in the most recent biological opinion included a requirement to limit scallop fishing.

Framework 21 and all future frameworks will include alternatives to comply with the scallop fishery-specific RPM mentioned above. The selected alternatives to comply with RPM for turtles used in FW21 included a seasonal closure in Delmarva for September and October and a limit on the amount of trips that can be used in the Mid-Atlantic from June 15 through August 31. These are both expected to have positive impacts on protected species by reducing effort in the area where they are known to cause interactions during the expected timeframe of these interactions.

The alternatives under consideration in this action do not appear to have any adverse cumulative effects on protected species that would alter the prognosis for impacts of fishing under Amendment 10 and Framework Adjustment 19, although there are other sources of human-induced mortality and/or harassment of turtles in the action area. These include incidental takes in state-regulated fishing activities, vessel collisions, ingestion of plastic debris, and pollution. While the combination of these activities may affect populations of endangered and threatened sea turtles, preventing or slowing a species' recovery, the magnitude of these effects is currently unknown.

*State Water Fisheries* - Fishing activities are considered one of the most significant causes of death and serious injury for sea turtles. A 1990 National Research Council report estimated that 550 to 5,500 sea turtles (juvenile and adult loggerheads and Kemp's ridleys) die each year from all other fishing activities besides shrimp fishing. Fishing gear in state waters, including bottom trawls, gillnets, trap/pot gear, and pound nets, take sea turtles each year. However, information on the takes is limited. Given that state managed commercial and recreational fisheries along the Atlantic coast are expected to continue within the action area in the foreseeable future, additional takes of sea turtles in these fisheries is anticipated.

*Vessel Interactions* – NOAA Fisheries STSSN data indicate that interactions with small recreational vessels are responsible for a large number of sea turtles stranded each year within the action area. Collision with boats can stun or easily kill sea turtles, and many stranded turtles have obvious propeller or collision marks.

*Pollution and Contaminants* - Marine debris (*e.g.*, discarded fishing line or lines from boats) can entangle turtles in the water and drown them. Turtles commonly ingest plastic or mistake debris for food. Chemical contaminants may also have an effect on sea turtle reproduction and survival. While the effects of contaminants on turtles are relatively unclear, pollution may be linked to the fibropapilloma virus that kills many turtles each year (NOAA Fisheries 1997). If pollution is not the causal agent, it may make sea turtles more susceptible to disease by weakening their immune systems. Excessive turbidity due to coastal development and/or construction sites could influence sea turtle foraging ability. As mentioned previously, turtles are not very easily affected by changes in water quality or increased suspended sediments, but if these alterations make habitat less suitable for turtles and hinder their capability to forage, eventually they would tend to leave or avoid these less desirable areas (Ruben and Morreale 1999).

*Low and Mid-frequency Sonar* – See Section 5.8.5.
The factors discussed above, and other factors, potentially have had cumulative adverse effects on most protected species to varying degrees. Because of a lack of cause-effect data, little is known about the magnitude and scope of these factors and how they have contributed to the species' listing.

A number of activities are in progress that may ameliorate some of the negative impacts on marine resources, sea turtles in particular, posed by the activities summarized above. Education and outreach are considered one of the primary tools to reduce the risk of collision represented by the operation of federal, private, and commercial vessels.

NMFS' regulations require fishermen to handle sea turtles in such a manner as to prevent injury. Any sea turtle taken incidentally during fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to a series of procedures (50 CFR 223.206(d)(1)). NMFS has been active in public outreach efforts to educate fishermen regarding sea turtle handling and resuscitation techniques. NMFS has also developed a recreational fishing brochure that outlines what to do should a sea turtle be hooked and includes recommended sea turtle conservation measures. These outreach efforts will continue in an attempt to increase the survival of protected species through education on proper release guidelines.

There is an extensive network of STSSN participants along the Atlantic and Gulf of Mexico coasts. This network not only collects data on dead sea turtles but also rescues and rehabilitates live stranded turtles. Data collected are used to monitor stranding levels and identify areas where unusual or elevated mortality is occurring. The data are also used to monitor incidence of disease, study toxicology and contaminants, and conduct genetic studies to determine population structure. All states that participate in the STSSN are collecting tissue for genetic studies to better understand the population dynamics of the northern subpopulation of nesting loggerheads. These states also tag live turtles when encountered through the stranding network or in-water studies. Tagging studies help provide an understanding of sea turtle movements, longevity, and reproductive patterns, all of which contribute to our ability to reach recovery goals for the species.

There is no organized formal program for at-sea disentanglement of sea turtles. However, recommendations for such programs are being considered by NMFS pursuant to conservation recommendations issued with several recent Section 7 consultations. Entangled sea turtles found at sea in recent years have been disentangled by STSSN members, the whale disentanglement team, the USCG, and fishermen. NMFS has developed a wheelhouse card to educate fishermen and recreational boaters on the sea turtle disentanglement network and disentanglement guidelines.

Actions taken to protect sea turtles include a Strategy for Sea Turtle Conservation and Recovery in Relation to Atlantic Ocean and Gulf of Mexico Fisheries (Sea Turtle Strategy), released by NMFS in June 2001, to address the incidental capture of sea turtle species in state and federal fisheries in the Atlantic and Gulf of Mexico. The major elements to the strategic plan include: continuing and improving stock assessments; improving and refining estimation techniques for the takes of sea turtles to ensure that ESA criteria for recovery are being met; continuing and improving the estimation or categorization of sea turtle bycatch by gear type and fishery; evaluating the significance of incidental takes by gear type; convening specialist groups to prepare take reduction plans for gear types with significant takes; and promulgating ESA and MSFCMA regulations implementing plans developed for take reduction by gear type. Actions taken under the Sea Turtle Strategy are expected to provide a net benefit to sea turtles.

In February 2003, NMFS issued a final rule to amend regulations protecting sea turtles to enhance their effectiveness in reducing sea turtle mortality resulting from shrimp trawling in the Atlantic and Gulf areas of the southeastern U.S. Turtle Excluder Devices (TEDs) have proven to be effective at excluding sea turtles from shrimp trawls; however, NMFS has determined that modifications to the design of TEDs needed to be made to exclude leatherbacks and large and mature loggerhead and green sea turtles. In addition, several approved TED designs did not function properly under normal fishing conditions. NMFS disallowed these TEDs. Finally, the rule requires modification to the try net and bait shrimp exemptions to the TED requirements to decrease mortality of sea turtles (68 FR 8456, 21 Feb 2003).

Significant measures have been taken to reduce sea turtle takes in summer flounder trawls and trawls that meet the definition of summer flounder trawls, which would include fisheries for species like scup and black sea bass, by requiring TEDs in trawl nets fished in the area of greatest turtle bycatch off the North Carolina and part of the Virginia coast from the North Carolina/South Carolina border to Cape Charles, VA. These measures are attributed to significantly reducing turtle deaths in the area (NMFS, 2007). In addition, NMFS issued a final rule (67 FR 56931), effective September 3, 2002, that closes the waters of Pamlico Sound, NC to fishing with gillnets with a mesh size larger than 4 1/4 inch (10.8 cm) stretched mesh ("large-mesh gillnet"), on a seasonal basis from September 1 through December 15 each year, to protect migrating sea turtles. The closed area includes all inshore waters of Pamlico Sound south of 35º 46.3' N. lat., north of 35º 00' N. lat., and east of 76º 30' W. long.

In December 2003, NMFS issued new regulations for the use of gillnets with larger than 8 inch stretched mesh in federal waters off of North Carolina and Virginia (67 FR 71895, 3 Dec. 2002). Gillnets with larger than 8 inch stretched mesh are not allowed in federal waters (3-200 nautical miles) north of the North Carolina/South Carolina border at the coast to Oregon Inlet at all times; north of Oregon Inlet to Currituck Beach Light, NC from March 16 through January 14; north of Currituck Beach Light, NC to Wachapreague Inlet, VA from April 1 through January 14; and, north of Wachapreague Inlet, VA to Chincoteague, VA from April 16 through January 14. Federal waters north of Chincoteague, VA are not affected by these new restrictions although NMFS is looking at additional information to determine whether expansion of the restrictions are necessary to protect sea turtles as they move into northern mid-Atlantic and New England waters. These measures are in addition to Harbor Porpoise Take Reduction Plan measures that prohibit the use of large-mesh gillnets in southern mid-Atlantic waters (territorial and federal waters from Delaware through North Carolina out to 72° 30'W longitude) from February 15-March 15, annually.

In May 2004, the agency issued regulations prohibiting the use of all pound net leaders, set with the inland end of the leader greater than 10 horizontal ft (3 m) from the mean low water line, from May 6 to July 15 each year in the Virginia waters of the mainstem Chesapeake Bay, south of 37º 19.0' N. lat. and west of 76º 13.0' W. long., and all waters south of 37º 13.0' N. lat. to the Chesapeake Bay Bridge Tunnel at the mouth of the Chesapeake Bay, and the James and York Rivers downstream of the first bridge in each tributary. Outside this area, the prohibition of leaders with greater than or equal to 12 inches (30.5 cm) stretched mesh and leaders with stringers, as established by the June 17, 2002 interim final rule, will apply from May 6 to July 15 each year. The action, taken under the ESA, is necessary to conserve sea turtles listed as threatened or endangered. NMFS also provides an exception to the prohibition on incidental take of threatened sea turtles for those who comply with the rule (69 FR 24997, 5 May 2004).

In July 2004, NMFS issued sea turtle bycatch and bycatch mortality mitigation measures for all Atlantic vessels that have pelagic longline gear onboard and that have been issued, or are required to have, Federal HMS limited access permits, consistent with the requirements of the ESA, the MSFCMA, and other domestic laws. These measures include mandatory circle hook and bait requirements, and mandatory possession and use of sea turtle release equipment to reduce bycatch mortality. This final rule also allows vessels with pelagic longline gear onboard that have been issued or are required to have Federal HMS limited access permits to fish in the Northeast Distant Closed Area if they possess and/or use certain circle hooks and baits, sea turtle release equipment, and comply with specified sea turtle handling and release protocols (69 FR 40733, 6 Jul 2004).

NMFS has published a final rule (70 FR 42508, July 25, 2005) that allows any agent or employee of NMFS, the FWS, the U.S. Coast Guard, or any other Federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife, when acting in the course of his or her official duties, to take endangered sea turtles encountered in the marine environment if such taking is necessary to aid a sick, injured, or entangled endangered sea turtle, or dispose of a dead endangered sea turtle, or salvage a dead endangered sea turtle that may be useful for scientific or educational purposes. NMFS already affords the same protection to sea turtles listed as threatened under the ESA (50 CFR 223.206(b).

In 2006, NMFS finalized a rule (71 FR 50361, August 23, 2006) that requires modification of scallop dredge gear by use of a chain mat when the gear is fished in Mid-Atlantic waters south of 49 9.0'N from the shoreline to the outer boundary of the EEZ during the period May 1 through November 30 each year. The intent of the dredge gear modification is to reduce the severity of some turtle interactions that might occur by preventing turtles from entering the dredge bag.

On February 15, 2007 the agency also issued an advance notice of proposed rulemaking to announce it is considering amendments to the regulatory requirements for turtle excluder devices (TEDs). Among other issues, specific changes include increasing the size of the TED escape opening currently required for sea scallop trawl gear and moving the current northern boundary of the Summer Flounder Fishery-Sea Turtle Protection Area off Cape Charles, Virginia to a point farther north. The objective of the proposed measures is to effectively protect all life stages and species of sea turtle in Atlantic trawl fisheries where they are vulnerable to incidental capture and mortality.

In 2008 a Loggerhead Sea Turtle Recovery Plan was published (NMFS and USFWS 2008) which did not include the Atlantic sea scallop fishery as a main source of mortality of the species. This document estimated loggerhead bycatch in the scallop fishery and the impact of takes on the population.

***Non-target Species***

Actions taken by the Council in the Scallop FMP in past, present, and reasonably foreseeable timeframe are mostly positive. Specific gear and area restrictions are in place that have reduced bycatch of various non-target species. Effort controls to maintain sustainability in the scallop fishery have reduced effort and increased efficiency of the fleet, which reduces impact on non-target species.

Amendment 16 to the Multispecies FMP is expected to be implemented on May 1, 2010. This action identified a process for setting annual catch limits (ACLs) for all Groundfish species. A sub-ACL will apply to all scallop fishery catches of yellowtail flounder, and is expected to have a positive effect on this and other non-target species.

Framework 44 to the GF plan recognizes the importance of yellowtail flounder to the scallop fishery and provides an incentive for scallop fishermen to reduce their YT bycatch in order to maximize scallop yield. Framework 44 also proposes that all limited access vessels be required to land all legal-sized yellowtail flounder, which will improve data quality and thus be beneficial to non-target species.

Framework 21 to the scallop plan implements FY2010 specifications which are similar to FY2009, and these are expected to have a neutral to potentially positive impact on non-target species.

***Fishery-related Businesses and Communities***

All actions taken under the Scallop FMP have had effects on fishery-related businesses and communities. None have specifically been developed to primarily address elements of fishing related businesses and communities. In general, actions that prevent overfishing have long-term benefits on businesses and communities that depend on those resources. Some actions that limit participation, such as the limited entry program that was adopted under Amendment 4 had distributional impacts on individuals and ports that participated in the scallop fishery at that time. While short-term negative impacts may follow an action that reduces effort, past and present actions had positive cumulative impacts on vessel owners, crew and their families in the scallop fishery by increasing their fishing revenues, incomes and standard of living. The impacts of these past and present actions were also positive for the related sectors including dealers, processors, primary suppliers to the vessels that sell them gear, engines, boats, etc. The increases in gross profits for scallop vessels and in crew incomes have had positive economic benefits on these sectors indirectly through the multiplier impacts. Total landings have increased, catch per unit of effort has increased, and price has steadily increased as well.

The Passamaquoddy Native American Tribe has been awarded licenses in the State of Maine to harvest scallops in state waters since 1998. Since this is a state fishery, the state of Maine monitors these landings. However, the impact of this fishery on the overall scallop resource is minimal because the size of the fleet is small relative to the scallop fleet managed under this FMP.

***Other Fisheries***

When Amendment 4 implemented limited entry for directed scallop effort, there was a stipulation that any vessel that qualified had to relinquish any other limited access permits (i.e. multispecies) unless that vessel qualified for a combination permit. Therefore, the ability of these qualifying vessels to fish in other limited access fisheries was eliminated. In effect, potential capacity and effort in other limited access fisheries has been reduced since 1994. Since the main component of the scallop fishery directs on scallops, the impacts of scallop actions on other fisheries is limited. The frameworks that have permitted controlled access in portions of the Georges Bank groundfish mortality closed areas have assessed the impacts on non-target species and they have not been significant. The access area program is under a yellowtail flounder bycatch TAC, so when that TAC is projected to be caught the area closes to scallop fishing. This has reduced impacts of scallop fishing on YT flounder within the access areas. Overall, measures adopted under the Scallop FMP do not have direct significant impacts on other fisheries.

Past and present actions relating to the summer flounder trawl fishery may also affect the general category trawl fishery. In summary, Amendment 10 made a number of changes to the summer flounder regulations implemented by Amendment 2 and later amendments to the Summer Flounder, Scup and Black Sea Bass FMP. Specifically, this amendment modified the commercial minimum mesh regulations, continued the moratorium on entry of additional commercial vessels, removed provisions that pertain to the expiration of the moratorium permit, prohibited the transfer of summer flounder at sea, and established a special permit for party/charter vessels to allow the possession of summer flounder parts smaller than the minimum size.

Amendment 11, approved by NMFS in 1998, was implemented to achieve consistency among Mid-Atlantic and New England FMPs regarding vessel replacement and upgrade provisions, permit history transfer, splitting, and renewal regulations for fishing vessels issued Northeast Limited Access Federal fishery permits.

Amendment 12 was developed to bring the Summer Flounder, Scup, and Black Sea Bass FMP into compliance with the new and revised National Standards and other required provisions of SFA. Specifically, the amendment revised the overfishing definitions (National Standard 1) for summer flounder, scup, and black sea bass and addressed the new and revised National Standards (National Standard 8 - consider effects on fishing communities; National Standard 9 - reduce bycatch; and National Standard 10 - promote safety at sea) relative to the existing management measures. The amendment also identified essential habitat for summer flounder, scup and black sea bass. In addition, Amendment 12 added a framework adjustment procedure that allows the Council to add or modify management measures through a streamlined public review process. Amendment 12 was partially approved on April 28, 1999.

Amendment 13 fully addressed how the management measures implemented to successfully manage these three species comply with the National Standards. Amendment 13 also addresses the fishing gear impacts to essential fish habitat. The Council has implemented many regulations that have indirectly acted to reduce fishing gear impacts on EFH.

In addition, Amendment 14 to this plan included a rebuilding timeline for scup, and Framework 7 built flexibility into the process to define and update status determination criteria for each plan species, and made scup GRAs modifiable through the framework adjustment process. All of these actions are expected to have positive impacts on the resource by making management more effective.

The Councils adopted the Monkfish Fishery Management Plan (FMP) in 1999. For the first eight years under the FMP, the fishery was in a rebuilding plan since the stocks were considered overfished (below the biomass target). In 2007, the Northeast Data Poor Stocks Working Group (DPWG) completed a monkfish stock assessment and recommended revisions to the biomass reference points. The Councils adopted the new reference points in December 2007, which resulted in the revisions to the stock status in both areas. Based on the new assessment and reference points, overfishing was not occurring and the stocks were rebuilt (above the biomass target) in both areas. The assessment report, however, contained several cautionary statements, due to the fact that this was the first use of a new assessment model and to uncertainty in the input data and overall knowledge of monkfish life history and population dynamics.

In 2007, the Councils proposed in Framework 4 to set catch targets (TTACs) at 5,000 mt and 5,100 mt for the NMA and SMA, respectively. The Councils requested the DPWG to evaluate the impact of applying those TTACs for the 2007-2009 fishing years. The DPWG concluded that under those catch targets, fishing mortality rates would remain below the threshold and biomass would remain in an upward trend above the biomass target. Upon receiving the DPWG report, NMFS approved Framework 4 which included an automatic extension of the TTACs beyond FY2009 if the Councils did not adopt new targets.

Also in 2007, the Magnuson-Stevens Fishery Conservation and Management Act was reauthorized (MSRA), and revised to include, among other things, the requirement that all FMPs establish Annual Catch Limits (ACLs) and measures to ensure accountability (AMs). For stocks not subject to overfishing, such as monkfish, the Act set a deadline of 2011 for the implementation of ACLs and AMs. In 2009, NMFS published revised National Standard 1 Guidelines which the Councils have used to develop ACLs and AMs for all FMPs.

Monkfish Amendment 5 was submitted to NMFS in September, 2010. Its stated goals were to implement the MSRA mandated ACLs and AMs, and to set the specifications of DAS, trip limits and other management measures to replace those adopted in Framework 4. The Councils are also proposing to make modifications to the FMP to improve the Research Set Aside (RSA) Program, to minimize bycatch resulting from trip limit overages, and to allow the landing of monkfish heads.

Finally, the Northeast Multispecies FMP was adopted in 1986 to manage key groundfish stocks from Maine to Cape Hatteras. Management actions under this FMP were summarized in Amendment 5, adopted in 1994. A host of management actions have taken place since this time which have aimed to control effort and limit entry into the fishery. These measures have helped to lower fishing mortality on overfished stocks through effort controls, gear regulations, and area closures, and therefore the long-term trend for cumulative impacts on the resource has been positive. However many of these actions have resulted in decreased access to the resource thus having negative impacts on human communities. Multispecies Amendment 16 was approved by the Council in June 2009 and the action was implemented in May 2010. This action updates status determination criteria and formal rebuilding programs, fishery program administration (sectors), and measures to meet mortality objectives. When considering the long-term positive trends in rebuilding in combination with further effort control measures designed to maintain or achieve sustainable stocks, the cumulative impact of MS Amendment 16 would be positive. While the short-term impacts, particularly to the human communities VEC, continue to be negative primarily due to economic losses, in the future as the status of the fishery improves and stocks recover, the industry and communities that rely on fisheries will incur positive impacts. A16 did include a provision to allow a vessel to possess both a limited access scallop and limited access multispecies permit. This is expected to have positive impacts on the vessels that are able to obtain both permits.

**Table 141 – Summary of effects from past and present actions. The effects from this action are included in a later table.**

| Action | Description | Impacts on Scallops | Impacts on Physical Env. and EFH | Impacts on Protected Species and Non-target species | Impacts on Fishery and Communities | Impacts on Other Fisheries |
|---|---|---|---|---|---|---|
| **SCALLOP ACTIONS** | | | | | | |
| Scallop FMP | Restore adult scallop stock and reduce fluctuation in stock abundance | Positive | Positive | Positive | Positive | Positive |
| Amendment 4 | Changed the primary management mechanism from the meat-count standard to an effort control program for all resource areas | Positive | Positive | Positive | Positive | Positive |
| Amendment 10 | Implement area rotation program and other measures to prevent overfishing and minimize impacts on EFH | Positive | Positive | Positive | Positive | Positive |
| Framework 18 | Set management measures for FY2006 and FY2007 | Positive | Neutral | Neutral | Positive | Neutral to potentially positive |
| Amendment 13 | Implement the industry funded observer program | Positive | Neutral | Positive | Neutral | Neutral to potentially positive |
| Framework 20 | Implement measure to reduce effort in January and February of 2007 | Positive | Neutral | Neutral | Positive | Neutral to potentially positive |
| SBRM Amendment | Implement a bycatch reporting methodology | Potentially Neutral | No Impact | Potentially Positive | Potentially Neutral | Neutral to potentially positive |
| Framework 19 | Set management measures for FY2008 and 2009, eliminated crew size restriction, LAGC IFQ program, obs and RSA program improvements, and VMS 30-day power down | Positive | Neutral | Neutral | Positive | Neutral to potentially positive |
| Amendment 11 | Limited entry program for the general category fishery | Potentially Positive | Potentially positive | Potentially positive | Potentially positive for some and potentially negative for others | Neutral to potentially positive |
| Framework 21 | Set management measures for FY2010, reduced effort in such a way to minimize sea turtle bycatch as per the BiOp, improvements to LAGC, observer, and RSA programs | Potentially positive | Potentially positive | Potentially positive | Potentially positive | Neutral to potentially positive |
| ***SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-*** | | **Positive** | **Positive** | **Positive** | **Positive** | **Positive** |
| **PHYSICAL ENVIRONMENT AND EFH ACTIONS** | | | | | | |
| EFH Omnibus Amendment (1998) | Comply with 1996 SFA to describe and identify EFH and minimize impacts of fishing on EFH | Positive | Positive | Neutral | Neutral | Positive |
| A13/A10 | Gear effects evaluation, minimize adverse impacts | Positive | Positive | Neutral to Positive | Negative | Positive |
| ***SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –*** | | **Positive** | **Positive** | **Neutral** | **Neutral/Negative** | **Positive** |
| **PROTECTED RESOURCES and NON-TARGET ACTIONS** | | | | | | |
| Chain mat rule | Gear modification to address turtle bycatch in the Mid-Atlantic | Neutral | Neutral | Positive | Low Negative | Neutral |

| Action | Description | Impacts on Scallops | Impacts on Physical Env. and EFH | Impacts on Protected Species and Non-target species | Impacts on Fishery and Communities | Impacts on Other Fisheries |
|---|---|---|---|---|---|---|
| Gear modifications | Twine top and other gear modifications to reduce finfish bycatch | Neutral | Neutral | Positive | Positive | Potentially positive |
| ***SUMMARY OF IMPACTS OF PROTECTED SPECIES AND NON-TARGET ACTIONS*** | | Neutral | Neutral | Positive | Neutral to positive | Neutral to potentially positive |
| **FISHERY AND COMMUNITY ACTIONS** | | | | | | |
| None Specific | N/A | N/A | N/A | N/A | N/A | N/A |
| **OTHER FISHERY ACTIONS** | | | | | | |
| FMPs and associated actions for Monkfish, Summer flounder, Multispecies, etc. | | Neutral to Positive | Positive | Positive | Negative to Positive | Positive |
| ***SUMMARY OF IMPACTS OF ALL PAST AND PRESENT ACTIONS ON EACH VEC*** | | **Positive** | **Positive** | **Positive/Neutral** | **Positive/Neutral** | **Positive/Neutral** |

### 5.8.4.2 Reasonably Foreseeable Future Actions

The impacts of reasonably foreseeable future actions have been considered relative to the VECs in this amendment and are described below and presented in Table 142. Overall, the impacts associated with reasonably foreseeable future actions to the VECs considered in this assessment are neutral and/or considered to be insignificant, as most impacts cannot be predicted at this time.

***Scallop Resource***

Several reasonably foreseeable future federal fishery management actions may affect the scallop resource. In general, the actions in the foreseeable future are expected to have positive impacts on the scallop resource overall.

- Framework 22 to the Scallop FMP

Framework 22 will be approved by the Council at the November 2010 Council meeting, and implementation is expected in summer 2011. It sets the fishery specifications for fishing years 2011 and 2012, with default measures for 2013 intended to be replaced by the next specifications package. It will also implement measures to comply with the RPM relating to sea turtles in the recent biological opinion (NMFS, 2008), and makes minor adjustments to the VMS requirements and a few other small changes. FW22 will likely allocate a lower DAS value than the status quo to vessels in 2011 and 2012 and maintains access area trips at four. In general the measures for general category vessels related to Framework 22 are expected to have positive impacts on the scallop resource.

- Multispecies Framework 45

Framework 45 to the Multispecies FMP includes an alternative to consider revising the rebuilding strategy for GB yellowtail flounder. This is not likely to have direct impacts on the scallop resource. Under a different alternative, vessels issued a General Category scallop permit will be exempt from the Great South Channel SNE/GB yellowtail flounder peak spawning closure, which occurs between April 1 and June 30. The exemption will also apply to the Great South Channel CC/GOM yellowtail flounder peak spawning closure, which occurs between June 1 and June 30. Because the LAGC is managed with IFQs, this measure is also unlikely to impact the scallop resource.

***Physical Environment and EFH***

In the spring of 2003, the New England Council initiated a Habitat Omnibus Amendment that will be considered Amendment 14 to the Atlantic Scallop FMP. It will also amend the Northeast Multispecies (Amendment 14), Monkfish (Amendment 4), Herring (Amendment 3) Skate (Amendment 2), Red Crab (Amendment 3) and Atlantic Salmon (Amendment 3) FMPs. This omnibus amendment will fulfill the five year EFH review and revision requirement specified in 50 CFR Section 600.815(a)(10). Although it is not known at this time how the recommendations might change fisheries or fisheries management, the intention is to provide additional habitat and species protection where it is needed.

Phase 1 of the EFH Omnibus has been substantially completed by the Council and includes new EFH designations for all species and life stages under management by the NEFMC, designation (but no management restrictions) of several habitat areas of particular concern (HAPC), an evaluation of the major prey species for species in the NEFMC fishery management units (FMU) and an evaluation of the potential impacts of non-fishing activities on EFH. Although the Council has completed Phase 1, the document and corresponding actions will not be submitted for implementation (and, therefore, no Record of Decision will be filed) until the completion of Phase 2 sometime in 2011. The potential exists for changes to the current suite of management measures to minimize adverse impacts on EFH (see Table 140) and/or additional measures to be implemented. The public will have the opportunity to comment on a combined Phase 1/Phase 2 document before final decisions are made by the Council.

Framework 22 is expected to have neutral to positive impacts on EFH and the physical environment.

***Protected Species***
NMFS recognizes that the specific nature of the interaction between sea turtles and scallop dredge gear remains unknown. The scallop dredge may strike sea turtles as it is fished, and this interaction would remain undocumented. Sea turtles could be taken when the dredge is being fished on the bottom or during haulback. NMFS does not know how the modified gear interacts with sea turtles on the bottom and in the water column. In order to understand the interaction, research is currently being conducted and is expected to continue. This work may provide more information on the interaction between sea turtles and scallop dredge gear in the water.

Currently there is an EIS in development for an Atlantic Trawl Rule to require the use of TEDs in trawl fisheries off the Northeast coast including the scallop trawl fishery. This rule consists of a series of temporal and spatial requirements for TED use. The scoping period has ended for this EIS and it is not clear when decision on this action will be made at this time. It is difficult to determine if there will be cumulative impacts on each VEC because this action is still early in development.

Framework 22 will likely limit the amount of effort that can be used in the time and area where sea turtle takes have been observed, and possibly include a time-area closure designed to reduce interactions with turtles. These alternatives are not fully developed yet but will be designed to have a positive effect on protected species.

***Non-target Species***
Framework 22 to the scallop plan, fishery specifications for 2011 and 2012, will be similar to recent years or even a reduction in effort, thus neutral to potentially positive impacts on non-target species.

***Fishery-related Businesses and Communities***
The combined impacts of the proposed area rotation and DAS measures in Framework 22 are not yet fully analyzed, but are expected to be neutral to positive in the short term compared to past actions. The specific alternatives for Framework 22 have not been developed yet so the impacts on the fishery are uncertain, but if allocations are similar to what they have been in most recent years, the impacts should be neutral to positive in the short-term.

### *Other Fisheries*

Multispecies FW45 will have potentially positive impacts on fishery-related businesses and communities in the short term if it allows the LAGC exemption and alters the Georges Bank yellowtail flounder rebuilding schedule. Overall, the impacts under development for the scallop and multispecies plans are likely to have neutral to positive impacts on other fisheries.

**Table 142 – Summary of effects from reasonably foreseeable future actions**

| Action | Description | Impacts on Scallops | Impacts on Physical Env. and EFH | Impacts on Protected Species | Impacts on Fishery and Communities | Impacts on Non-Target Species |
|---|---|---|---|---|---|---|
| **Scallop Actions** | | | | | | |
| Frameworks 21 and 22 | Implement fishery specifications for 2010, 2011 and 2012 as well as specific measure to reduce interactions with sea turtles | Neutral to Potentially positive | Neutral to Potentially positive | Neutral to Potentially positive for sea turtles | Potentially negative to potentially positive | Neutral to Potentially positive |
| ***SUMMARY OF IMPACTS FROM SCALLOP ACTIONS-*** | | **Neutral to potentially positive** | **Neutral to potentially positive** | **Neutral to potentially positive** | **Neutral/ potentially positive** | **Neutral/ potentially positive** |
| **Physical Environment and EFH Actions** | | | | | | |
| Phase I EFH Omnibus | Review EFH designations, consider HAPC alternatives, describe prey species, evaluate non-fishing impacts | Positive | Positive | Neutral | Neutral | Positive |
| Phase II EFH Omnibus | Review gear effects and minimize adverse impacts | Potentially neutral | Positive | Potentially Neutral | Potentially positive or negative | Neutral to potentially positive |
| ***SUMMARY OF IMPACTS FROM PHYSICAL ENV/EFH ACTIONS –*** | | **Positive** | **Positive** | **Neutral** | **Neutral** | Neutral to potentially positive |
| **Protected Resources Actions** | | | | | | |
| Sea turtle strategy | NMFS program to address incidental capture of turtles in state and federal fisheries | No Impact | No Impact | Positive | Low Negative | Neutral to positive |
| Atlantic take reduction team | Requirements to reduce interaction with marine mammals | No Impact | No Impact | Positive | Low Negative | No impact |
| Use of TEDS in trawl gear | Action under consideration that could require the use of TEDs in trawl fisheries off the Northeast coast including the scallop trawl fishery | No Impact | No Impact | Positive | Potentially negative to potentially positive | Neutral to positive |
| ***SUMMARY OF IMPACTS FROM PROTECTED RESOURCES ACTIONS*** | | **No Impact** | **No Impact** | **Positive** | **Low Negative** | **Neutral** |
| **Fishery Community Actions** | | | | | | |
| ***N/A*** | | | | | | |
| **Non-target species Actions** | | | | | | |
| ***Multispecies Framework 45*** | | **Neutral** | **Positive** | **Positive** | **Positive** | **Positive** |

### 5.8.5 Non-fishing impacts

The impacts of the following non-fishing activities are discussed in relation to scallop EFH in Section 4.2 of this document. Although they are presented in relation to the physical environment and EFH, the non-fishing impacts relate to all VECs identified in this amendment and are considered in this analysis (Table 143). Other non-fishing impacts that are important for consideration are also discussed below. The non-fishing impacts discussed in this section include:

- Vessel operations and marine transportation;
- Dredge and fill activities;
- Pollution/water quality;
- Agricultural and silvicultural/timber harvest runoff;
- Pesticide application;
- Water intake structures/discharge plumes;
- Loss of coastal wetland;
- Road building and maintenance;
- Flood control/shoreline stabilization;
- Utility lines/cables/pipeline installation;
- Oil and gas exploration/development/production;
- Introduction of exotic species;
- Aquaculture operations;
- Marine mining; and
- Other potential sources.

**Low and mid-frequency sonar** may pose an additional threat to protected species. According to the June 2006 National Marine Fisheries Service's Biological Opinion (BO), issued under Section 7(a)(2) of the Endangered Species Act, regarding the effects of the U.S. Navy's proposed 2006 Rim of the Pacific Naval Exercise and the Permits, Education and Conservation Division's proposal to issue an incidental harassment authorization (IHA) for exercises associated with endangered and threatened species, acoustic systems are becoming increasingly implicated in marine mammal strandings. Citing the Joint Interim Report on the Bahamas Marine Mammal Stranding Event of 15–16 March 2000, DOC and the Department of the Navy (DON), 2001, the document discusses that mass strandings in particular have been linked to mid-frequency sonar.

Summarizing various theories associated with the impacts of low and mid-frequency sonar, the BO states that marine mammals become disoriented or that the sound forces them to surface too quickly, which may cause symptoms similar to decompression sickness, or that they are physically injured by the sound pressure. The biological mechanisms for effects that lead to strandings must be determined through scientific research, according to the NMFS document, which also provides an extensive overview of the issue. The Biological Opinion, the IHA permit issued on July 2006 and other related documents are available through NMFS at http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications.

More recent information on the impacts of low and mid-frequency sonar is provided in a request from the U.S. Navy for an authorization under the Marine Mammal Protection Act (MMPA) to take marine mammals by harassment, incidental to conducting operations of Surveillance Towed Array Sensor System (SURTASS) Low Frequency Active (LFA) sonar over a five-year period (72 FR 37404, July 9, 2007).

Federal legislation being debated in Congress could override a lawsuit settlement agreement and exempt the military from the “harassment” provisions of the MMPA, easing the restrictions that now limit the deployment of low frequency sonar by the U.S. Navy.

The **National Offshore Aquaculture Act** is proposed to provide the necessary authority to the Secretary of Commerce to establish and implement a regulatory system for aquaculture in Federal waters. The bill would: authorize the Secretary to issue offshore aquaculture permits and establish environmental requirements where existing requirements under current law are inadequate; exempt permitted offshore aquaculture from legal definitions of fishing that restrict size, season, and harvest methods; authorize the establishment of a research and development program in support of offshore aquaculture; require the Secretary to work with other Federal agencies to develop and implement a streamlined and coordinated permitting process for aquaculture in the EEZ; authorize to be appropriated “such sums as may be necessary” to carry out this Act; and provide enforcement for the Act.

In addition, one way the United States plans to meet its present and future energy demands is through the importation of **Liquefied Natural Gas (LNG).** Currently, the United States has four onshore LNG import terminals in coastal port areas: Everett, Massachusetts, Cove Point, Maryland, Elba Island, Georgia, and Lake Charles, Louisiana. These four existing import terminals have been around since the 1970s. There is an additional onshore import facility located in Penuelas, Puerto Rico. This facility began importing liquefied natural gas in August 2000.

Due to potential hazards associated with onshore LNG terminals, many state and local governments have opposed the construction of any new onshore LNG terminals. For example, there have been numerous proposals for onshore LNG terminals along the coast of Maine. Most of these proposals (Harpswell, Hope Island, Cousins Island, Sears Island, and Pleasant Point) have either been rejected by local voters or withdrawn. Most opponents to onshore LNG terminals maintain that LNG is unsafe, harms the environment, and disrupts commercial fishing. Companies, like ChevronTexaco and Shell, are now moving towards developing LNG terminals offshore on the outer continental shelf.

In April 2005, Gulf Gateway Energy Bridge (formerly known as El Paso Energy Bridge) became the world’s first offshore LNG terminal to begin operation. Gulf Gateway is located 116 miles offshore of the Louisiana coastline. To date, including Gulf Gateway, there are three offshore LNG projects that have been approved. These three LNG terminals are all located in the Gulf of Mexico. Port Pelican’s (ChevronTexaco) proposed site is located thirty-six miles off the Louisiana coastline, while Gulf Landing’s (Shell) is located thirty-eight miles offshore of Louisiana.

Nationally, seven proposed offshore LNG terminals are currently under review, including a potential terminal to be built offshore of Gloucester, Massachusetts. The other projects under review include:  Cabrillo Port (fourteen miles offshore of Ventura County, California), Clearwater Port (fourteen miles offshore of southern California), Main Pass Energy Hub (offshore of Alabama, Louisiana, and Mississippi), Compass Port (offshore of Alabama and Mississippi), Pearl Crossing (forty-one miles offshore of Louisiana), and Beacon Port (offshore of Louisiana).  The application for the proposed offshore LNG terminal off the coast of Gloucester (Gateway and Neptune projects) have been approved.

The two primary effects on the commercial and recreational fishing industries from offshore LNG terminals are the indirect impacts of displaced fishing effort and the potential for adverse impacts on fish stocks resulting from adverse impacts on EFH due to the vaporization process, where LNG is converted from a liquid to gaseous state.  The degree to which the scallop fishery in particular may be impacted can not be fully understood until an LNG terminal has completed the sitting process.  However, a recent EIS filed by the U.S. Coast Guard and the Maritime Administration on the Main Pass Energy Hub plan indicates that the “open-loop” vaporization process, which pushes seawater through a radiator-type structure that warms and vaporizes the super-cooled LNG and discharges that water back into the sea, would affect fish eggs and larvae as well as other zooplankton and phytoplankton.  The resulting impacts are limited to the water discharge plumes, and while no firm data on the size of such plumes have been provided, the report states that the effects will not be serious or long lasting.  The report concludes that none of the potential impacts on EFH would be expected to result in population-level impacts or a reduction in biomass for any stocks.

According to preliminary documents filed with the U.S. Coast Guard and the Federal Energy Regulatory Commission, displacement of fishing effort would be limited to a less than one nautical mile radius circle that would be closed to all fishing and recreational activities during the offloading of LNG.  Additionally, a security zone of less than one quarter of a nautical mile would be maintained around the LNG tankers as they transit to and from the offload facility. While these closures may displace a limited amount of fishing effort, the total amount of fishable bottom impacted is expected to be minimal, and the effort displaced would not likely have an adverse impact on neighboring, or any other, fishing areas.

Onshore LNG facilities are currently being proposed or planned for construction in Pleasant Point, ME; Somerset, MA; Providence, RI; Long Island Sound, NY; Logan Township, NJ; Philadelphia, PA; and an expansion of an existing facility in Cove Point, MD.

Depending on the specific location and type of LNG facility, a range of impacts to fisheries and/or fisheries habitat may result from both construction and operation of terminals. Due to the large size of LNG tankers, dredging may need to occur to access onshore terminals. Dredging can result in direct loss of fish and/or shellfish habitat and can elevate levels of suspended sediment within the water column. As with other dredging, suspended sediments can impact various life stages of fish and shellfish. Further, the construction of pipelines and fill associated with site construction can have adverse impacts on inter-tidal habitats and salt marshes in the area.

Although only two offshore wind energy projects have formally been proposed in the northeast region, at least 20 other separate projects may be proposed in the near future. Cape Wind

Associates (CWA) proposes to construct a wind farm on Horseshoe Shoal, located between Cape Cod and Nantucket in Nantucket Sound, Massachusetts. A second project is proposed by the Long Island Power Authority (LIPA) off of Long Island, New York. The CWA project would have 130 wind turbines located as close as 4.1 miles offshore of Cape Cod in an area of approximately 24 square miles, with the turbines being placed at a minimum of 1/3 mile apart. The turbines will be interconnected by cables, which will relay the energy to shore to the power grid. If approved, vessels from southern New England may experience an increase in costs associated with having to steam around the wind farms on their way to and from fishing grounds on Georges Bank.

The Army Corps of Engineers has developed a DEIS and has completed a scoping process for the proposed Cape Wind Associates (CWA) project on Horseshoe Shoal. If constructed, the turbines would preempt other bottom uses in an area similar to oil and natural gas leases. The potential impacts associated with the CWA offshore wind energy project include the construction, operation and removal of turbine platforms and transmission cables; thermal and vibration impacts; and changes to species assemblages within the area from the introduction of vertical structures. A thorough analysis of the effects of these impacts on fishing has not yet been conducted, but data indicate that there would not be a substantial impact on the scallop fishery as there is little scallop fishing activity in this area. While EFH may be adversely impacted in the vicinity of the wind turbines, the extent of this proposal is not sufficient to have any population-level impacts on resource biomass or health.

Non-fishing activities pose a risk to EFH for all species as well as to each scallop life stage's EFH. Many of the non-fishing impacts are unquantifiable, but are likely negative. In general, the greatest potential for adverse impacts to scallops and scallop EFH occurs in close proximity to the coast where human-induced disturbances, like pollution and dredging activities, are occurring. Because inshore and coastal areas support essential egg, larval and juvenile scallop habitats, it is likely that the potential threats to inshore and coastal habitats are of greater importance to the species than threats to offshore habitats. It is also likely that these inshore activities will continue to grow in importance in the future. Activities of concern include: chemical threats; sewage; changes in water temperature, salinity and dissolved oxygen; suspended sediment and activities that involve dredging and the disposal of dredged material. There is more and more evidence that changes in water quality resulting from increasing acidification and water temperature could have potentially negative cumulative impacts on the scallop resource and fishery. In addition, researchers have observed tunicate growing over larger portions of Georges Bank. These invasive species may have negative impacts on the resource and fishery if they spread in critical areas for the fishery.

Impacts of non-fishing activities on all the VECs that were considered in this EIS were evaluated to be low to moderately negative.

**Table 143 – Summary of effects from non-fishing activities**

| Action | Description | Impacts on Scallops | Impacts on Physical Env and EFH | Impacts on Protected Species | Impacts on Fishery and Communities (including Other Fisheries) |
|---|---|---|---|---|---|
| P,Pr,RFFA Vessel operations, marine transportation | Expansion of port facilities, vessel operations and recreational marinas | **No Impact at Site** | **Potentially Negative Inshore** – may lead to destruction of habitat | **Negative at Site** – inshore species impacted by reduced water quality and haul out activity | **Potentially Negative** if loss of fishing opportunities occur |
| P, Pr, RFFA Beach nourishment, dredge and fill activities | Offshore mining of sand for beaches Placement of sand to nourish beach shorelines | **Negative at Site** – entrainment, sedimentation and turbidity impacts to fish in area in and around borrow site<br><br>**Negative at Site** – may displace fish, remove benthic prey and increase mortality of early life stages | **Negative at Site** – may lead to destruction of habitat in and around borrow site<br><br>**Negative at Site** – may result in burial of structures that serve as foraging or shelter sites | **Negative at Site** – mining activity increases noise and reduces water quality<br><br>**Negative at Site** – turtles susceptible to impacts from beach nourishment | **Negative at Site** – potential loss of fishing opportunities<br><br>**Positive at Site** – restoration of an eroding shore may protect or restore recreational beaches |
| P, Pr, RFFA Pollution/water quality | Land runoff, precipitation, atmospheric deposition, seepage, or hydrologic modification Point-source discharges | **Negative at Site** – impacts primarily inshore | **Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH | **Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading | **Negative at Site** – potential loss of fishing opportunities, human health issues |
| P, Pr, RFFA Agriculture and timber harvest runoff | Nutrients applied to agriculture land are introduced into aquatic systems | **Negative at Site** – impacts primarily inshore | **Negative at Site** – impacts primarily inshore, leads to destruction of habitat | **Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading | **Negative at Site** – potential loss of fishing opportunities |
| P, Pr, RFFA Pesticide application | Substances that are designed to repel, kill, or regulate the growth of undesirable biological organisms | **Negative at Site** – impacts primarily inshore | **Negative at Site** – impacts primarily inshore, leads to destruction of habitat and EFH | **Negative at Site** – inshore species impacted by impaired biological food chain and poor water quality due to nutrient loading | **Negative at Site** – potential loss of fishing opportunities, human health issues |
| P, Pr, RFFA Water intake structures/ discharge plumes | Withdrawal of estuarine and marine waters by water intake structures | **No Impact** | **Potentially Low Negative at Site** - discharge plumes may affect local oceanographic conditions | **Negative at Site** – intake structures can entrap protected species | **No Impact** |
| P, Pr, RFFA Loss of coastal wetland | Urban growth and development Development activities within watersheds and in coastal marine areas | **Potentially Low Negative at Site** – may result in habitat degradation | **Potentially Low Negative at Site** – may result in habitat degradation | **Negative at Site** – results in habitat loss for fish species that represent prey items and may result on habitat degradation potentially affecting nesting sites | **Potentially Low Negative at Site** – may result in biomass declines if spawning, health, or mortality are affected |

| Action | Description | Impacts on Scallops | Impacts on Physical Env and EFH | Impacts on Protected Species | Impacts on Fishery and Communities (including Other Fisheries) |
|---|---|---|---|---|---|
| P, Pr, RFFA Loss of coastal wetland | Urban growth and development Development activities within watersheds and in coastal marine areas | **Potentially Low Negative at Site** – may result in habitat degradation | **Potentially Low Negative at Site** – may result in habitat degradation | **Negative at Site** – results in habitat loss for fish species that represent prey items and may result on habitat degradation potentially affecting nesting sites | **Potentially Low Negative at Site** – may result in biomass declines if spawning, health, or mortality are affected |
| P, Pr, RFFA Road building and maintenance | Paved and dirt roads Poorly surfaced roads can substantially increase surface erosion | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data |
| P, Pr, RFFA Flood control/ shoreline stabilization | Protection of riverine and estuarine communities from flooding events Dikes, levees, ditches, or other water controls | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data |
| P, Pr, RFFA Utility lines/cables/ pipeline installation | Dredging of wetlands, coastal, port and harbor areas for port maintenance | **Negative at Site** – impacts primarily inshore | **Negative at Site** – impacts primarily inshore, leads to destruction of habitat | **Negative at Site** – dredging activity increases noise and may lead to mortality or injury of protected species | **Negative** – potential loss of fishing opportunities |
| P, Pr, RFFA Oil and gas exploration/ development | General exploration and development, as well as hydrocarbon spills associated with the transportation, loading and offloading of oil and gas products | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data |
| P, Pr, RFFA Exotic Species | Introduction of non-indigenous and reared species | **Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species | **Potentially Negative**- exotic species (ex., tunicates) found to adversely impact EFH and displace marketable and forage species | **Potentially Negative**– ecosystem effects of non-native species | **Potentially Negative**- while no direct evidence exists, it is likely that invasive species may affect overall ecosystem health and the biomass of marketable species |
| P, Pr, RFFA Marine Mining | Offshore mining as well the mining of gravel from beaches | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data | **Potentially negative –** no data |
| P, Pr, RFFA Low and mid- Frequency Sonar | Used in military exercises; considered a potential source of serious injury and mortality | **Potentially negative** – may negatively impact species in immediate vicinity of exercises using sonar | **No impact** | **Potentially Negative**- literature documents cetacean mortalities in vicinity of exercises using sonar | **Potentially negative** – potential loss of fishing opportunities, but exercises related to national security |
| RFFA National Offshore | Legislation would grant DOC authority | **Potentially negative**- may | **Potentially negative**- may | **Potentially negative** - may be | **Potentially neutral** - may be positive for |

| Action | Description | Impacts on Scallops | Impacts on Physical Env and EFH | Impacts on Protected Species | Impacts on Fishery and Communities (including Other Fisheries) |
|---|---|---|---|---|---|
| Aquaculture Act of 2005 (currently proposed) | to issue permits for offshore aquaculture in federal waters | negatively impact species by reducing water quality near aquaculture sites | negatively impact habitat by reducing water quality near aquaculture sites | negative if activities result in interactions with protected species | communities near sites; negative if prices of commercially harvested fish are impacted |
| [RFFA] Liquefied Natural Gas (LNG) terminals - several LNG terminals are proposed, including RI, NY, NJ and DE (w/in 5 years) | Transportation of natural gas via tanker to terminals located offshore and onshore | **Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms | **Negative** - habitat negatively impacted during construction phase and when vessels anchor to offload gas | **Negative** – may disrupt protected species during construction through increased noise and poor water quality | **Negative** - security zones around LNG facilities restrict access to fishing areas<br>Positive – location of LNG facilities offshore may protect or improve communities |
| [RFFA] Offshore Wind Energy Facilities - several facilities proposed from ME through NC, including off the coast of NY/NJ and VA (w/in 5 years) | Construction of wind turbines to harness electrical power | **Potentially Negative**– short-term disruption of habitat during construction could negatively impact organisms | **Negative** – habitat negatively impacted during construction phase | **Potentially Negative**– may disrupt protected species during construction through increased noise and poor water quality | **Negative** – if fishing activity is precluded in area where turbines are located<br>Negative – aesthetic impacts<br><br>**Positive** – renewable clean energy resource |
| ***SUMMARY OF IMPACTS OF NON-FISHING ACTIVITIES – Overall, impacts are variable but greatest on the physical environment and EFH, but found to be low to moderately adverse; lack of data precludes more in-depth analysis of impacts on other VECs*** | | **Potentially Negative** | **Potentially Negative** | **Potentially negative** | **Potentially Negative** |

### 5.8.6 Cumulative Effects Analysis

Below is a description of the expected cumulative effects of the measures under consideration for Amendment 15. First is a summary paragraph related to the direct and indirect impacts on each VEC. This description is based on the information provided in Table 144, a summary of the direct and indirect impacts of the measures under consideration on each VEC (scallop resource, EFH, protected resource, fishery related businesses and communities and other fisheries). The proposed action is highlighted in that table in grey.

For each VEC, there is also a summary paragraph describing the cumulative effects of the measures under consideration in terms of how the past, present and reasonably foreseeable future actions impact each VEC, as well as non-fishing activities and direct/indirect impacts of Amendment 15. This discussion for each VEC is based on information summarized in previous sections and tables on the past, present, and reasonably foreseeable future actions, non-fishing impacts, and direct and indirect impacts of Amendment 15. Lastly, there is a summary of the cumulative effects of the proposed action only, in terms of the magnitude and extent of cumulative impacts on a VEC-by-VEC basis in combination with other actions (past, present, and reasonably foreseeable future actions) as well as the effects from non-fishing actions.

***Scallop Resource***

Summary of direct and indirect impacts on the scallop resource

In general, most alternatives under consideration have neutral to positive indirect/direct impacts on the scallop resource when compared to No Action. Adoption of ACLs and AMs is required by the reauthorized Magnuson Act as a means of ending and preventing overfishing, so this action should inherently have positive impacts on the resource. Generally, the analysis of scientific uncertainty and incorporation of buffers and AMs should improve management and make the fishery less likely to exceed $F_{target}$.

The alternatives to allow stacking and leasing of scallop permits in the LAGC fishery could increase efficiency in the fishery, thus increasing LPUE and reducing area swept which could potentially have a positive impact on the scallop resource.

A15 is also considering measures that will adjust the current overfishing definition (OFD) to be more compatible with area rotation. Specifically, the new overfishing definition would average fishing mortality over time and not space; area-specific thresholds would be set based on past fishing mortality rates and area rotation policies. This more accurate model should increase the likelihood of successful management and be positive for the scallop resource.

Minor adjustments to the recently-implemented limited access general category management program that would affect the scallop resource are also being considered including an allowance of IFQ rollover; allocation of area-specific IFQ; modifications to the general category possession limit; and adjusting the restriction on maximum quota per fishing platform from 2% to 2.5% of the total general category allocation. These adjustments should increase the efficiency of the fleet and have a positive effect on the resource.

A range of options are being considered to address timing concerns and efficient use of resource for the RSA program which would be indirectly beneficial to the resource.

Summary of cumulative effects on the scallop resource

**Overall, the cumulative effects on the scallop resource are neutral to positive**. In terms of past and present actions such as the Scallop FMP, Amendment 4, and Amendments 10 and 11, there have been positive effects on the scallop resource. Other past EFH actions and actions in other FMPs have had neutral or positive effects as well (Table 141). In terms of reasonably foreseeable future actions, Amendment 15 is expected to have positive impacts on the scallop resource. There are also several EFH, protected resources and other fishery-related actions that are expected to have either no impact or potentially positive impacts. Therefore, the overall effects of reasonably foreseeable future actions on the scallop resource are potentially positive (Table 142). In addition, the effects of non-fishing activities on the scallop resource are mostly potentially negative (Table 143). Lastly, the direct and indirect effects of the measures under consideration in Amendment 15 are expected to have positive to neutral impacts on the scallop resource (Table 144). Thus, when the direct and indirect effects of the alternatives are considered in combination with all other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects on the scallop resource are likely to be neutral to positive.

***Physical Environment / EFH***

Summary of direct and indirect impacts on EFH

The potential impacts on EFH from each of the proposed measures are described within Section 5.2. Although scallop dredges have been shown to be associated with adverse impacts to some types of bottom habitat (NEFMC 2003), no measure contained in this Amendment is likely to increase adverse impacts to areas designated EFH relative to the No Action alternative. Amendment 15 is considering measures to address the essential fish habitat (EFH) closed areas under the Scallop FMP if Phase II of the EFH Amendment is delayed. Specifically, this action would consider making the EFH closed areas consistent under both the Scallop and Groundfish FMP for scallop vessels if Phase II of the EFH Omnibus Amendment is delayed. If this measure is approved, there could be cumulative benefits for the scallop resource if more effort can be used in areas with higher catch per unit of effort.

Summary of cumulative effects on EFH

**Overall, the cumulative effects on the physical environment/EFH are neutral to positive**. In terms of past and present actions such as the Scallop FMP, Amendment 4, and Amendments 10 and 11, there have been positive effects on EFH. Other past EFH actions and actions in other FMPs have had mostly positive effects as well (Table 141). In terms of reasonably foreseeable future actions, there are several EFH actions that may have potentially positive effects on EFH. In addition, there are several reasonably foreseeable future scallop and other fishery-related actions that are expected to have no impact on EFH. Therefore, the overall effects of reasonably foreseeable future actions on EFH are neutral to potentially positive (Table 142). In addition, the effects of non-fishing activities on EFH are negative (Table 143). Lastly, the direct and indirect effects of the measures under consideration in Amendment 15 are expected to have mostly neutral impacts on EFH. Thus, when the direct and indirect effects of the alternatives are considered in combination with all other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects on the physical environment/EFH are likely to be neutral to positive.

***Protected Resources***

Summary of direct and indirect impacts on protected resources

Most alternatives under consideration in Amendment 15 have neutral or potentially positive direct impacts on threatened and endangered sea turtles when compared to No Action.

In terms of the improvements to the research set-aside program, there are indirect beneficial impacts on protected resources if changes lead to research which results in more knowledge of the interactions of the scallop fishery and protected resources. Numerous turtle-related research projects have been funded through the Scallop RSA program to date, and that topic is a high priority for future research proposals. In addition, much of the information known about when and where interactions have occurred are from data collected through the observer set-aside program. So both these programs are expected to have continued indirect benefits on protected resources. The specific impacts on protected resources from each of the proposed measures are described within Section 5.3.

Summary of cumulative effects on protected resources

Sea turtles, have been, are, and will continue to be, negatively impacted by a variety of past, present, and reasonably foreseeable future activities which may be affecting the recovery of the species. The extent to which this may be happening cannot be quantified at this time but is potentially negative. As noted above, however, the measures presented in this action are unlikely to alter the impacts that occur as a result of both fishing and non-fishing activities but may positively impact some currently negative effects by instituting a limited access management program. **Overall, the cumulative effects on protected resources are neutral to potentially positive**.

In terms of past and present actions, there have been positive to neutral effects on protected resources (Table 141). In terms of reasonably foreseeable future actions, there are several protected resource related actions that may have positive effects on protected resources. In addition, there are several reasonably foreseeable future scallop and other fishery-related actions that are expected to have potentially positive impacts on protected resources. The activities that are negatively impacting sea turtles will continue to be addressed through fishery management plans as well as by the agency to ensure sea turtles are protected. One of the goals of NMFS's Sea Turtle Strategy is to develop and implement plans to reduce takes of sea turtles in Atlantic Ocean and Gulf of Mexico fisheries. Implementation of these plans will have a net beneficial impact on sea turtle species. NMFS also intends to continue outreach efforts to educate fishermen regarding sea turtles. Future anticipated research will likely enhance knowledge concerning the nature of the interactions between sea turtles and sea scallop dredge gear, potentially leading to the implementation of alternative management measures that may confer benefits to animals in areas where overlap with the fishery occurs. Therefore, the overall effects of reasonably foreseeable future actions on protected resources are neutral to potentially positive (Table 142). In addition, the effects of non-fishing activities on protected resources are potentially negative (Table 143).

Lastly, the direct and indirect effects of the measures under consideration in Amendment 15 are expected to have mostly potentially positive impacts on protected resources (Table 144). Thus, when the direct and indirect effects of the alternatives are considered in combination with other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects on protected resource are likely to be neutral to potentially positive.

***Non-Target Species***

None of the measures included in the proposed action are expected to have significant impacts on non-target species. This action has considered the potential impacts of the alternatives under consideration on non-target species (small scallops as well as finfish and other bycatch species) and in general, all the measures under consideration have positive or neutral impacts on non-target species. This action is not expected to have large effects on the current fishing behavior of the fishery in terms of fishing location and patterns. Since the Scallop FMP in general strives to allocate fishing effort in areas with high scallop catch per-unit-of-effort, impacts on bycatch are reduced. The specific AM measures for YT flounder are expected to have beneficial impacts by controlling mortality of that species.

The combined effects of past actions in the scallop FMP have decreased effort and improved habitat protection, which benefits non-target species. In addition, current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species. Finally, future actions are anticipated to continue rebuilding and thus limit the take of discards/bycatch in the scallop fishery. Overall, continued management of directed stocks will also control catch of non-target species. **Overall, the cumulative effects on non-target species are neutral to potentially positive**.

***Fishery-Related Businesses and Communities***

Most alternatives under consideration in Amendment 15 have neutral or potentially positive impacts on fishery-related businesses and communities compared to No Action. Amendment 15 is considering measures that address capacity in the limited access scallop fishery and improve overall economic performance while considering impacts on various fisheries and fishing communities. Measures to improve the economic efficiency of the limited access fishery, an objective of National Standard 5, will also take into account the importance of fishery resources to fishing communities to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities (National Standard 8). This action will also include measures to minimize costs and unnecessary duplication (National Standard 7). There is some trepidation that stacking and leasing will lead to consolidation and loss of jobs, which would be a negative impact on businesses and communities.

Amendment 15 is considering implementation of Community Fishing Associations in the LAGC fishery. The establishment of CFAs could have positive impacts on the participants by allowing fishermen to combine their allocations and to fish using fewer vessels in order to reduce fishing costs. This will provide an opportunity for fishermen to establish and benefit from an economically viable operation when the allocations of individual vessels are too small to make scallop fishing profitable. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on revenues and producer and consumer benefits.

Most of the other measures in this action will not change economic impacts for the scallop fishery, or are expected to have indirect economic benefits.

***<u>Summary of cumulative effects on fishery-related businesses and communities</u>***
**Overall, the cumulative effects on the fishery-related businesses and communities are neutral to potentially positive**. In terms of past and present actions such as the Scallop FMP, Amendment 4, and Amendment 10, there have been positive effects on the scallop fishing community. Other past EFH actions and actions in other FMPs have had neutral or low negative effects (Table 141). In terms of reasonably foreseeable future actions, there are several scallop related actions that are expected to have positive impacts overall. There are also several EFH, protected resources and other fishery-related actions that are expected to have potentially positive or low negative impacts on fishery-related businesses and communities. Therefore, the overall effects of reasonably foreseeable future actions on the fishery-related businesses and communities are neutral (Table 142). In addition, the effects of non-fishing activities on the fishery-related businesses and communities are mostly potentially negative (Table 143). Lastly, the direct and indirect effects of the measures under consideration in Amendment 15 are expected to have neutral to potentially positive impacts on the fishery-related businesses and communities overall (Table 144). Thus, when the direct and indirect effects of the alternatives are considered in combination with other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects on fishery-related businesses and communities are likely to be neutral to potentially positive.

***Other Fisheries***
The majority of alternatives in this action will not have direct impacts on other fisheries. Leasing and/or permit stacking are expected to have neutral or even positive impacts on other fisheries because vessels that participate in stacking will have less time to potentially prosecute other fisheries, a single platform will likely be more profitable with two scallop allocations reducing incentive to target other fisheries, and when permits stack any duplicate permits cancel. Therefore, overall permits in other fisheries are likely to decline as a result of permit stacking. The only other alternatives that are expected to impact other fisheries are regarding the general category. The increase in LAGC possession limit could reduce the amount of days it takes for a vessel to harvest its IFQ, thus giving it more time to prosecute other species. This could have negative impacts on other fisheries, but it is unclear to what extent. Ultimately, the vast majority of IFQ permit holders received a relatively small allocation of scallop quota, so they already have most of the year to fish for other species they have permits for. Therefore, this change is likely marginal and is not expected to impact other fisheries in any substantial way.

***<u>Summary of cumulative effects on other fisheries</u>***
**Overall, the cumulative effects on other fisheries are neutral to potentially positive**. In terms of past and present actions in the Multispecies, Monkfish, and Summer flounder/Black Sea Bass and Scup FMPs, there have been positive effects on for these fisheries. Other past EFH actions and actions in other FMPs have had neutral or low negative effects (Table 141). In terms of reasonably foreseeable future actions, there are no major actions that are expected to have substantial impacts on other fisheries in development at this time. There are several EFH, protected resources and other fishery-related actions that are expected to have potentially positive or low negative impacts on fishery-related businesses and communities. Therefore, the

overall effects of reasonably foreseeable future actions on other fisheries are neutral (Table 142). In addition, the effects of non-fishing activities on other fisheries are mostly potentially negative (Table 143). Lastly, the direct and indirect effects of the measures under consideration in Amendment 15 are expected to have neutral to potentially positive impacts on other fisheries overall (Table 144). Thus, when the direct and indirect effects of the alternatives are considered in combination with other actions (*i.e.,* past, present, and reasonably foreseeable future actions), the cumulative effects on other fisheries are likely to be neutral to potentially positive.

**Table 144 – Cumulative effects of alternatives under consideration on the four Amendment 15 VECs; proposed action is shaded**

| Section | Alternative Name | Scallop Resource | Physical Environment / EFH | Protected Resources and Non-target species | Fishery-related businesses and communities | Other Fisheries |
|---|---|---|---|---|---|---|
| 3.1 | No Action | No Impact | No Impact | No Impact | No Impact | No Impact |
| **3.2** | **ALTERNATIVES TO IMPLEMENT ACLs IN THE SCALLOP FMP** | | | | | |
| 3.2.3.2 | Incorporation of ACL Structure | Positive | Potentially low positive | No impact | Low positive | Neutral |
| 3.2.3.7.3 | ABC Control rule | Positive | Neutral | Neutral | Positive | Neutral |
| 3.2.3.8 | Management Uncertainty | | | | | Neutral |
| 3.2.3.8.1 | Buffer between LA sub-ACL and ACT set at F with 25% probability of overfishing | Positive | Potentially low positive | No impact | No impact | Neutral |
| | LA Buffer based on LPUE uncertainty - 10% less than sub-ACL | Low positive | Potentially low positive | No impact | Negative in short-term (2010), positive in long-term | Neutral |
| 3.2.3.8.2 | LAGC buffer 0% (ACL = ACT) | Low positive | Potentially low positive | No impact | Low negative in short-term (2010), low positive in long-term | Neutral |
| | LAGC buffer up to 5% | Low positive | Potentially low positive | No impact | Low positive in short-term, low positive in long-term | Neutral |
| 3.2.3.9.1 | LA AMs | Positive | Positive | Positive | Positive long-term | Neutral |
| 3.2.3.9.2 | LAGC AMs | Positive | Positive | Positive | Positive long-term | Neutral |

| Section | Alternative Name | Scallop Resource | Physical Environment / EFH | Protected Resources and Non-target species | Fishery-related businesses and communities | Other Fisheries |
|---|---|---|---|---|---|---|
| | Yellowtail flounder AMs | Potentially negative | Potentially low positive | Potentially low negative for PR if effort shifts to MA Positive for YT | Low positive in short-term, positive in long-term | Neutral |
| **3.3** | **MEASURES TO ADDRESS EXCESS CAPACITY IN THE LIMITED ACCESS FLEET** | | | | | |
| 3.3.1 | No Action | No impact | Potentially neutral | No impact | No Impact | No Impact |
| 3.3.2 | Permit Stacking | No impact to low negative, depending on adjustments | Potentially low positive | Neutral to potentially positive or negative | Potentially positive for boats/businesses that stack, potentially negative for communities | Neutral to potentially positive |
| 3.3.2.2 | Fishing power adjustments | Neutral to Positive | No impact | No impact | Overall Neutral although could be negative for some and positive for others | Neutral |
| 3.3.2.3 | DAS carryover provision | No impact | No impact | No impact | Neutral to Positive | Neutral |
| 3.3.2.4 | De-stacking of stacked permits | No impact | No impact | No impact | Positive for some Negative for others | Neutral |
| 3.3.3 | Permit Leasing | No impact to low negative, depending on adjustments | Potentially low positive | Neutral to potentially positive or negative | Potentially positive for boats/businesses that lease, potentially negative for communities | Neutral to potentially positive |
| 3.3.2.2 | Fishing power adjustments | Neutral to Positive | No impact | No impact | Overall Neutral although could be negative for some and positive for others | Neutral |
| 3.3.3.1.2 | DAS landings history | No impact | No impact | No impact | Positive for some Negative for others | Neutral |
| 3.3.3.4 | Ownership cap | No impact | No impact | No impact | Neutral to Positive | Neutral |

| Section | Alternative Name | Scallop Resource | Physical Environment / EFH | Protected Resources and Non-target species | Fishery-related businesses and communities | Other Fisheries |
|---|---|---|---|---|---|---|
| 3.3.3.7 and 3.3.3.8 | Leasing from CPH and Sub-leasing | No impact | No impact | No impact | Positive | Neutral |
| **3.4** | **MEASURES TO ADJUST SPECIFIC ASPECTS OF FMP TO MAKE OVERALL PROGRAM MORE EFFECTIVE** | | | | | |
| 3.4.1 | Adjustments to OFD to make compatible with area rotation – Hybrid overfishing definition and update reference points | Positive | Potentially positive | Neutral to potentially positive | Potentially positive | No Impact |
| 3.4.2 | MEASURES FOR GENERAL CATEGORY VESSELS | | | | | |
| 3.4.2.1.2 | Allow rollover of 15% IFQ | Neutral | No impact | No impact | Potentially positive | No Impact |
| 3.4.2.3 | Modify possession limit to 600 lbs | No Impact | Low positive | No impact | Positive | Potentially negative |
| 3.4.2.4 | Restrict one vessel from fishing more than 2.5% of the total LAGC quota | No impact | No impact | No impact | Low positive | Neutral to potentially negative |
| 3.4.2.5.1 | Allow IFQ transfer between permit holders | No impact | No impact | No impact | Low positive | Neutral |
| 3.4.2.5.2 | Allow IFQ transfer to community-based trusts or permit banks | Potentially positive | No impact | No impact | Potentially positive | Neutral |
| 3.4.2.6 | Establish process for CFAs | No impact | No impact | No impact | Positive | Neutral |
| 3.4.3 | MEASURES TO ADDRESS EFH CLOSED AREAS IF EFH OMNIBUS AMENDMENT 2 IS DELAYED | | | | | |
| 3.4.3.2 | Modify EFH closed areas to be consistent with MS A13 | Potentially positive | Neutral | Positive | Positive | Potentially neutral |
| 3.4.4 | MEASURES TO IMPROVE RSA PROGRAM | | | | | |
| | Publish funding opportunities as soon as possible | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |

| Section | Alternative Name | Scallop Resource | Physical Environment / EFH | Protected Resources and Non-target species | Fishery-related businesses and communities | Other Fisheries |
|---|---|---|---|---|---|---|
| | Extend RSA Program to be multiyear | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Modify open area RSA from DAS to pounds | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Modify entire RSA allocation to be fixed poundage instead of percent | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Separate RSA TAC into two categories – survey and other | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Remove additional TAC for survey work | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Allow rollover of unused RSA TAC | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Extension of harvesting compensation TAC | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Increase public input of RSA review process | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| | Exempt RSA projects from certain regulations | Potentially low positive | Potentially low positive | Potentially low positive | Potentially low positive | No Impact |
| 3.4.5 | MODIFY THE FISHING YEAR | | | | | |
| | Start date of May 1 | Potentially positive | No impact | No impact | Potentially negative to Potentially positive | No Impact |
| | Set Year 3 default measures | Potentially positive | No impact | No impact | Potentially low positive | No Impact |

# 6.0 COMPLIANCE WITH APPLICABLE LAW

# 6.1 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

### 6.1.1 National standards

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans (FMPs) contain conservation and management measures that are consistent with the ten National Standards:

*(1) 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 alternatives in this action were developed by the Council to meet the goals of the FMP to prevent overfishing. Amendment 15 was developed primarily to establish ACLs and AMs as required under the MSA. The MSA established these requirements to ensure that FMPs incorporate annual catch levels that correspond to fishing mortality targets and thresholds so as to prevent overfishing and achieve optimum yield on a continuing basis. In addition, the new MSA requirements for AMs ensures that if catch levels are exceeded, that measures are taken to both offset the catch overage and prevent future overages. In setting the catch limits, specifically acceptable biological catch (ABC), Amendment 15 proposes to account for scientific uncertainty associated with several parameters defined and evaluated for scientific uncertainty in the amendment. Accounting for scientific and management uncertainty further ensure that catch limits are not exceeded and prevent overfishing. In Amendment 15, the PDT established a robust quantitative assessment of scientific uncertainty which was approved by the Council's SSC. In addition, the proposed "hybrid" overfishing definitions also expected to prevent overfishing by setting fishing mortality targets that are more compatible with area rotation and reducing the potential for localized and growth overfishing on open areas.

*(2) Conservation and management measures shall be based upon the best scientific information available.*

This document uses information of known quality from sources acceptable to the relevant scientific and technical communities. Several sources of data were used in the development of this document. These data sources include, but are not limited to: Permit data; landings data from vessel trip reports; data from the dealer weighout purchase reports; scallop survey data; and data from at-sea observers. These data are considered to be the best available, and compared to other resources in this region, this is a very data rich fishery. In addition, the 50th stock assessment workshop (SAW 50) conducted in late-2009 through early-2010 included a scallop resource stock assessment. These formal stock assessments undergo rigorous development and review, are peer reviewed, and are the only such comprehensive assessments. They are therefore the best available information on the status of the resource and fishery. Conclusions and results were available during development of this action, and final results summarized in the August 2010 assessment report. The results of SAW 50 are included in Section 4.1.

*(3) 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.*

Under the Atlantic Sea Scallop FMP, the target fishing mortality rate and stock biomass are applied to the scallop resource from NC to the US/Canada boundary. Although the Sea Scallop Area Rotation Program includes different management measures by area, the overall management program applies to the entire resource from NC to the US/Canada boundary. Also, although the proposed hybrid overfishing definition establishes different fishing mortality targets for access areas and open areas, the targets are combined to apply to the entire resource. Therefore, scallops are managed as a unit throughout the entire range of scallop stocks under Federal jurisdiction. See Section 4.1 for a description of the scallop resource.

*(4) 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 manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.*

The management measures proposed in this action do not discriminate between residents of different states. There are no alternatives in the proposed action that will favor one geographical region over another.

*(5) 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 current measures in place sufficiently address efficiency in the utilization of the scallop resource. While the stacking and leasing alternatives considered were expected to improve efficiency compared to No Action, the Council ultimately decided that the potential negative impacts on vessels that do not stack or lease outweighed the cost savings, efficiency gains, and conservation of non-fishery resources expected from stacking and leasing. A detailed description of the basis for the Council's decision to exclude stacking and leasing provisions is included in Section 3.0. Ultimately the Council decided that current permit restrictions, gear and crew restrictions, vessel upgrade restrictions, possession limits and other effort controls are sufficient to control capacity of this fleet, as evidenced by the status of the stock remaining not overfished with no overfishing occurring in the recent stock assessment.

The increase of the limited access general category possession limit from 400 to 600 pounds in the proposed action will allow for increased efficiency in the harvest of that quota. The Council believes that increasing the possession limit higher than 600 pounds or eliminating it, it not practicable at this time.

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

The Proposed Action takes into account variations among and contingencies in fisheries, fishery resources, and catches. This action enhances the ability of the FMP to adapt to changing resource conditions. Improvements in ACL management, updating the overfishing definition, and changing the EFH closed areas will all allow the FMP greater flexibility to achieve optimum yield on a continuing basis while preventing overfishing. The framework adjustment process will be enhanced under Amendment 15 to enable the Council and NMFS to adjust measures every 2 years or more frequently if necessary to adjust to changing fishery conditions.

*(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.*

The Council considered the costs and benefits associated with the Proposed Action when developing this action. The proposed action does not introduce any new measures that duplicate measures already in place. Particularly for the limited access general category fleet, this action will decrease costs as the increased possession limit will allow permit holders to harvest their quota on fewer trips. The increased access to EFH areas that were closed to scallopers under Amendment 10 will allow for increased cost effectiveness as well because some of these areas contain higher densities than areas previously designated for access. The management measures proposed in this amendment are not duplicative and were developed in close coordination with NMFS and the Mid-Atlantic Fishery Management Council.

*(8) 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 by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.*

This document includes an update of fishery and community information in Section 4.4. The economic and social impacts, which affect fishing communities, are analyzed and discussed in Sections 5.4 and 5.5.

The proposed action is not expected to jeopardize the sustained participation of fishing communities that have depended on the scallop resource. The implementation of ACLs and AMs, the change in the EFH closed areas, and the change in the overfishing definition are expected to improve management such that we continue to ensure a healthy resource that will be able to support historical levels of participation by fishing communities in the long-term.

In the short-term (i.e. fishing year 2010), landings, revenues and economic benefits for the proposed action are somewhat similar to but slightly higher than landings and economic benefits for the ‘No Action’ alternative. The ACL flow chart that will be implemented under the proposed action increases allocation compared to the status quo because it helps prevent overfishing.

One of the primary reasons the Council did not select permit stacking and/or leasing in this action is because of the potential negative impacts on fishing communities. Some issues raised were potential loss of jobs on the waterfront that would have trickle-down impacts on other fisheries and communities, potential impacts on future fishing opportunities for vessels that do not stack or lease, potential impacts on other fisheries if scallop vessels redirect effort after leasing out scallop effort, and unintended consequences of additional consolidation in the scallop fishery.

*(9) 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.*

Bycatch in the scallop fishery has been greatly reduced and minimized by the success of the FMP to increase scallop biomass and reduce the amount of time fished on a DAS. The FMP has also implemented several gear restrictions that have successfully reduced bycatch. These effects are discussed in detail in Section 6.1.9 of the Amendment 10 FSEIS, and in related sections of that document.

The proposed action includes several measures to minimize bycatch and to ensure that mortality does not increase to a point that it would threaten the rebuilding of other stocks. Foremost, these measures include a sub-ACL (set in the multispecies plan) and an AM for yellowtail flounder (a species vulnerable to capture by scallop dredges). Under this AM, if, by January 15 of each year, the Regional Administrator determines that a yellowtail flounder sub-ACL for the scallop fishery will be exceeded, the specified statistical areas with highest YT bycatch rates will be closed to scallop fishing on March 1 and remain closed for a specified length of time depending on the percentage overage. To make monitoring more effective for this AM, VMS will be expanded to include daily reports for each trip of yellowtail flounder catch and all other species landed by YT stock area.

This action also considered whether sub-ACLs for other species were warranted. Section 3.2.3.11.1assessed the bycatch in this fishery and determined that the Scallop FMP should not identify sub-ACLs for non-target species until the primary FMP that manages that species does. If other plans such as the Monkfish, Groundfish, or Summer Flounder FMP identify a sub-ACL for the scallop fishery in the future, then specific AMs could be developed in the scallop plan to further minimize bycatch of those species.

In addition, the proposed action will continue the regulations to use a minimum 4-inch ring in scallop dredges and a 10-inch minimum twine top. The Amendment 10 analysis showed that both these measures would reduce finfish bycatch by reducing fishing time and allowing greater escapement of small finfish. Opening of EFH areas may decrease bycatch by allowing access to more dense aggregations of scallops, thus allowing the same amount of scallops to be caught with less bottom time and area swept. Improvements to the RSA program will indirectly benefit bycatch because many of the research priorities intend to develop and improve methods that will minimize bycatch in the scallop fishery. Lastly, the hybrid overfishing definition will likely reduce effort in open areas, so bottom time will be lower having beneficial impacts for bycatch.

A summary of the impacts of these measures are analyzed and described in Section 5.6. Bycatch of protected species is analyzed in Section 5.3.

*(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.*

Section 6.1.10 in the Amendment 10 FSEIS discusses the effect of current scallop management and of rotation area management on safety. The proposed action should help to promote safety at sea in the limited access general category fishery by increasing the possession limit and allowing fishermen to harvest their quota in fewer trips. In addition, this amendment includes a 15% IFQ rollover in the limited access general category fishery which would allow increased access should a portion of quota not be able to be harvested due to weather or other ocean conditions late in the fishing year. The rest of the proposed action is not expected to have large impacts on fishing behavior, and thus safety at sea.

### 6.1.2 Other Required Provisions of the M-S Act

Section 303 of the Magnuson-Stevens Fishery Conservation and Management Act contains 14 additional required provisions for FMPs, which are discussed below. Any FMP 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;*

Since the domestic scallop fishery has harvested and is capable of continuing to catch and process the acceptable biological catch (ABC), there is no total allowable level of foreign fishing (TALFF) and foreign fishing on sea scallops is not permissible at this time.

*(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;*

The fishery and fishery participants are described in detail in Section 4.4 of Amendment 15 to the Scallop FMP including a description of the scallop permits by category as well as the active scallop vessels by permit type that could be affected by this action. The number of trips and average scallops landed per category are also included.

*(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 and probable future condition of the resource and estimates of MSY and OY are updated in this action in Section 4.1.1.2. The scallop resource was assessed in June 2010 during SAW 50, and reference points were updated along with the overfishing definition in the proposed action. This information is detailed in Section 4.1.1.1.

These reference points and the hybrid overfishing definition were peer reviewed and supported by the PDT and SSC. Various sources of scientific uncertainty are described in the document in Section 3.2.3.7 and incorporated in the ACL flow chart. EFH closed areas that are not accessible to the fishery, as well as scallop rotational areas that are only available to the fishery at certain times and effort is limited.

Current domestic landings and processing capabilities are around 50 million lbs. Total landings have been above that level in some years since 2004, and are closer to 55 million pounds for 2009 and 2010 (projected). Vessel trip reports and Federal seafood dealer records through the 2009 fishing year (the most recent full fishing year of data) were used to determine landings. Landings in 2010 are based on the most recent data through September 2010 and projected through the remainder of the fishing year based on historical landings in the fishery.

*(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;*

The US fishery is expected to harvest 100% of OY and domestic processors are expected to be able to process 100% of OY. United States fish processors will process 100% of the scallops landed by the US fishery.

*(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, charter fishing, and fish processing 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, economic information necessary to meet the requirement and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors;*

The FMP and existing regulations specify the type of reports and information that scallop vessel owners and scallop dealers must submit to NMFS. These data include, but are not limited to, the weight of target species and incidental catch which is landed, characteristics about the vessel and gear in use, the number of crew aboard the vessel, when and where the vessel fished, and other pertinent information about a scallop fishing trip. Dealers (i.e. processors) must report the weight of species landed by the vessel, the date of landing, and the ex-vessel price for each species and/or size grade. Important information about vessel characteristics, ownership, and location of operation is also required on scallop permit applications. Dealers are also surveyed for information about their processing capabilities.

All limited access scallop vessels and general category vessels are required to operate vessel monitoring system (VMS) equipment to record the location of the vessel for monitoring compliance with DAS regulations. An at-sea observer is also placed on scallop vessels at random to record more detailed information about the catch, including size frequency data, the quantity of discards by species, detailed gear data, and interactions with protected species.

The proposed action also includes expanded VMS requirements to include daily reports for each trip of yellowtail flounder catch and all other species landed by YT stock area to make monitoring of the yellowtail flounder AM more effective.

There are no Federal recreational or charter fisheries for scallops. A vessel must have a Federal limited access or limited access general category scallop permit to possess scallops in or from Federal waters.

*(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;*

The action proposed in this amendment includes a 15% IFQ rollover in the limited access general category fishery which would allow increased access should a portion of quota not be able to be harvested due to weather or other ocean conditions late in the fishing year. The rest of this amendment does not alter any adjustments made in the Scallop FMP that address opportunities for vessels that would otherwise be prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fisheries. No consultation with the Coast Guard is required relative to this issue.

*(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 has been defined in earlier scallop actions. This amendment proposes modifying the EFH definitions put forth in scallop Amendment 10 to make EFH closed areas consistent with Multispecies Amendment 13. By eliminating the scallop EFH closures from Amendment 10, this action would have the effect intended by Framework 16/39 for the 2011 fishing year and beyond, unless habitat areas/gear restrictions are subsequently modified by EFH Omnibus Amendment 2. Updated analyses support that this proposed action will improve practicability for the fleet, reduce area swept in other areas, and provide a potential economic gain that outweighs the costs of the current closure. Based on the findings of the EFH Assessment, Section 6.1.3, there are no additional impacts to the physical environment or EFH expected from the action proposed in this amendment.

*(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;*

Data and research needs relative to the Atlantic sea scallop and its associated fisheries are described in Section 4.1 of Amendment 15. Other data already collected include fishery dependent data described in Section 6.2.4 of Amendment 10 and fishery-independent resource surveys that provide an index of scallop abundance and biomass. These surveys are described Section 4.1.1.1 of Amendment 15. The Scallop FMP utilizes a research set-aside program to help achieve specified research priorities by allocating catch to researchers to help pay for the costs of conducting the research.

*(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; (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; and (C) the safety of human life at sea, including weather and to what extend such measures may affect the safety of participants in the fishery;*

The impacts of the scallop management program in general have been analyzed in previous scallop actions (Amendment 10, Amendment 11, Framework 16, Framework 18, 19 and 21). Any additional impacts from measures proposed in this action on fishery participants are summarized in Sections 5.4 and 5.5. Safety in the scallop fishery was described in Section 8.1.5.6 of Amendment 10. The proposed action allows 15% rollover of IFQ for limited access general category fishermen, which has the potential to improve safety at sea because fishermen will not be forced to go out to sea in bad weather to harvest quota late in the year. Nothing else proposed in this action will affect safety of human life at sea.

*(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;*

Overfishing reference points describing targets and thresholds for biomass and fishing mortality are presented and explained in Section 4.1.1.2 of Amendment 15. These reference points were slightly modified in the proposed action based on the results of the June 2010 Stock Assessment Workshop (SAW 50, NEFSC 2010). Implementation of ACLs and AMs are designed to establish catch levels that will prevent overfishing and will achieve optimum yield on a continuing basis. The ACL flow chart proposed in this action accounts for all sources of catch in the scallop fishery. ABC and ACT are set below OFL and ACL, respectively, to account for scientific and management uncertainty in scallop resource assessments and in the fishery. The AMs are preventative in terms of an ACT, and a payback is proposed should that ACT be exceeded. This structure is consistent with the Magnuson-Stevens Act National Standard Guidelines for compliance with the reauthorized Magnuson-Stevens Act.

*(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;*

This action does not include changes to the current SBRM which establishes annually the fishery observer coverage levels needed to evaluate bycatch in the scallop fishery. This methodology is expected to assess the amount and type of bycatch in the scallop fishery and help identify ways the fishery can minimize bycatch and mortality of bycatch which cannot be avoided. The scallop fishery utilizes an industry funded observer set-aside program that provides funding (portion of total scallop catch is set-aside) to help scallop vessel owners pay for the cost of observers. A summary of the extent of observer coverage in this fishery can be found in Section 4.5.1.3.

*(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;*

There are no Federal recreational or charter fisheries for scallops. A vessel must have a Federal limited access or limited access general category scallop permit to possess scallops in or from Federal waters.

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

A detailed description of the scallop fishery is included in Section 4.4 of this action. These sections provide information relative to scallop vessels, processors, and dealers.

There are no Federal recreational or charter fisheries for scallops. A vessel must have a Federal limited access or limited access general category scallop permit to possess scallops in or from Federal waters.

*(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate, taking into consideration the economic impact of the harvest restrictions or recovery benefits on the fishery participants in each sector, any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery; and*

This action does not directly propose a reduction in total catch in the scallop fishery compared to recent years. Although actual landing levels may fluctuate under annual management measures, the ACL and AM measures, combined with the existing Rotational Area Management Program are intended to stabilize landings and certainty in management by accounting for all catch. The measures included in this action are expected to have long-term benefits for participating vessels, and the economic impacts on various sectors of the fishery have been considered. Section 5.4 is a detailed examination of the expected economic impacts of this action. Harvest from the Atlantic sea scallop fishery will continue to be reviewed, established, and analyzed through the biennial framework process.

In addition, this action proposes adding a third year of specifications in each biennial framework due to the fact that all recent framework actions have been implemented late and often the rollover regulations under No Action (or status quo) are not beneficial to the resource or the fishery. This third year of specifications will be superseded by the next framework and only act as transitional measures. Recreational fishing for sea scallops is rare and does not affect the success of the FMP. Furthermore, if catch levels are higher than predicted from DAS allocations and the limited access fishery exceeds their sub-ACL, but fishing mortality is not increased, so AMs do not trigger, the general category fishery will also benefit from those higher catches from underestimated biomass. Alternative 3.2.3.9.1.1 was expanded to replace some of the allocation the LAGC would have received had the projection been closer to realized catch (more biomass provided more catch under the same F). The Council believes that expanding this disclaimer to include the LAGC fishery is necessary to bring allocated catch and realized catch percentages closer to what was intended.

*(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.*

The proposed action includes a process to specify annual catch limits for the scallop fishery. This amendment brings the Scallop FMP into compliance with annual catch limits (ACLs) and accountability measures (AMs) required under the reauthorized Magnuson-Stevens Act of 2007. This will meet the requirement that the Scallop FMP implement ACLs and AMs.

#### 6.1.2.1 Summary of A15 Magnuson public hearings

Six public hearings were held for the DEIS for Amendment 15 in July 2010. At these hearings, nearly all alternatives in document were covered in the comments. Some commends included clarifications that were needed in the document, but most discussed the impacts of the measures on the industry and other stakeholders. A summary of comments from the public hearings grouped by alternatives is below.

*Stacking/Leasing*

There was much more opposition than support for stacking and leasing alternatives. Some favored leasing, but not stacking, and those favoring leasing/stacking agreed for the most part with FPA, but not the mortality 'tax.' All who were supportive cited increased efficiency for their business and the fleet overall as reason for wanting to stack. Those opposing measures cited work by Dr. Olsen in A15, and national standards 5 and 7, along with a fear that small businesses will not be able to remain viable. They worry that increased efficiency will bring resource biomass down and cause reduced DAS for all. They also felt that the FPA and mortality adjustments are not enough to account for increased efficiency that will be seen with stacking and leasing.

*ACLs and AMs*
There was generally support for the flow chart, but some concerns were raised. The majority of industry favors Year 3 yellowtail AMs and wants to avoid any AMs that will cause derby effects or take place at a bad time for fishermen. There was minority support for more proactive AMs; these people think we have the monitoring in place for real-time closures, etc. Most felt the 25% chance of exceeding ABC is an appropriate way to account for scientific uncertainty, and favor the use of an ACT as AM in LA fishery. There was support for LA management uncertainty Option 1 (ACT at F with 25% chance of exceeding LA ACL), and support for 0% management uncertainty buffer in LAGC.

*LAGC*
The majority of speakers favored leaving the possession limit at status quo. Those who want to see it increased feel it would help them cut down on fuel costs and spend less time away from home, and gave values ranging from 600-1000 lbs. Those who want to keep it the same think an increase could threaten the nature of the fishery. There was some support for making it frameworkable. There was universal support for IFQ rollover and quota splitting. Opinion on CFAs was split, with more support than opposition but concerns still exist.

*EFH and FY*
There was nearly unanimous support for changing EFH closed areas to be consistent with GF because the industry wants to see increased access to high density resource. A minority feels the Omnibus amendment is too close to changing it all anyway so we should leave as is. There was no real support for changing the fishing year because the majority in the industry feels it works as is and will cause business problems if changed. Even those that seemed to want to support it to make management more effective feared the effect it would have during the transition period.

*RSA*
There was much support for the research set-aside program in general, but lots feel it is not running effectively and want to see changes. There was generally support whatever researchers ask for, but industry wants to be sure research stays on industry boats and does not go to 'subsidize' NMFS survey.

### 6.1.3 EFH Assessment

This essential fish habitat (EFH) assessment is provided pursuant to 50 CFR 600.920(e) of the EFH Final Rule.

#### 6.1.3.1 Description of action

Amendment 15 implements measures for annual catch limits (ACLs) and accountability measures (AMs) in the limited access (LA) and limited access general category (LAGC) scallop fisheries to comply with the reauthorization of the Magnuson-Stevens Act, and implements changes to make the FMP more effective. The proposed action includes an ACL structure and accountability measures for the scallop fishery, and for yellowtail flounder caught as bycatch in the scallop fishery. It also includes changes to the overfishing definition, general category IFQ program, EFH closed areas, and research set-aside program.

***ACLs and AMs***
An ACL flow chart will be used which is based on the structure OFL > ABC = ACL > ACT. Sub-ACLs will be administered for the LA and LAGC fisheries at 94.5% and 5.5% of the overall ACL, respectively. The LA sub-ACT will then be set at an F rate with 25% probability of exceeding the LA sub-ACL to account for management uncertainty. The LAGC sub-ACT will be set equal to the LAGC sub-ACL (because this is an IFQ fishery and should not have management error beyond what is already accounted for).

The limited access fishery will use an ACT as AM, in addition to having an overall DAS reduction in the subsequent year to account for any overage. It will also have a disclaimer that if overall F is re-estimated after the fishing year has ended and is more than one standard deviation below overall F for the ACL, AMs for the LA fishery will not be triggered. If the limited access disclaimer is triggered, then 5.5% of the difference between the original limited access sub-ACL and the actual limited access landings will be allocated to the limited access general category IFQ fleet the next year. The poundage will be deducted directly from the following year's limited access sub-ACL and will be divided among the IFQ fleet the same way that all quota is divided now. The AM for the LAGC fishery will be on an individual basis, IFQ reductions the following year if an overage occurs.

Yellowtail flounder caught in the scallop fishery will be under the following AM: if by January 15 the Regional Administrator determines that a yellowtail flounder sub-ACL for the scallop fishery will be exceeded, the specified statistical areas with highest YT bycatch rates will be closed to scallop fishing on March 1 and remain closed for a specified length of time depending on the percentage overage. Closures will not apply to general category trips in exempted areas. To make monitoring more effective for this AM, VMS will be expanded to include daily reports for each trip of yellowtail flounder catch and all other species landed by YT stock area. Any overages of the YT sub-ACL for the scallop fishery in 2010 will also be subject to the same AM described above upon implementation of this action.

***Changes to make the FMP more effective***
The "hybrid" overfishing definition will be implemented and reference points will be changed from $F_{max}$ and $B_{max}$ to $F_{msy}$ and $B_{msy}$. In the limited access general category fishery, the possession limit will be raised to 600 lbs, a rollover of 15% of original annual allocation will be allowed if unused, the maximum quota one vessel can harvest will be increased to 2.5%, and limited access general category quota can now be split from a permit for LAGC IFQ vessels only, not for LA vessels with LAGC permits. EFH closed areas will be modified to be consistent with EFH areas closed under multispecies Amendment 13. A host of improvements will be made to the RSA program, including using a set-aside poundage, instead of a percentage. Finally, specifications packages for this FMP will now include a third year to be used in the interim if the action is not implemented before the start of the fishing year. These third year specs will be superseded by the next specification package as soon as it goes into effect.

***Location of proposed action and overlap with designated EFH***
In general, the activity described by this proposed action, fishing for sea scallops, occurs throughout the U.S. EEZ, from about the NC/VA border to the coastal portions of the Gulf of

Maine in the north. The concentrations of sea scallops, and thus the majority of scallop fishing activity, occur within a narrow depth band in the Mid-Atlantic from about the 40-meter isobath out to the 100-meter isobath, throughout the Hudson Canyon area, and around the perimeter of Georges Bank, including the Great South Channel. This range of activity encompasses designated EFH for numerous species managed by both the New England and Mid-Atlantic Fishery Management Councils, as described in the Affected Environment section of this document. 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.

#### 6.1.3.2 Potential adverse effects of the action on EFH

Potential anticipated changes in adverse effects of the scallop fishery on EFH as a result of the proposed action are summarized below (Table 145). Some of the measures in Amendment 15 are administrative (i.e. most of the ACL/AM measures, and the measures that make items frameworkable). Because these measures have little to do with the location and magnitude of catches, they are unlikely to change the fishery's impacts to EFH. The proposed change to the overfishing definition will affect the magnitude and location of catches from both open and access areas. This is expected to decrease impacts to EFH because the new OFD is more compatible with the overall area rotation management strategy, the goal of which is to focus fishing effort on high-density aggregations of scallops in access areas, while avoiding overfishing in open areas. Similarly, the proposed addition of year three specifications to future framework actions is expected to decrease adverse effects, because harvest strategies that best reflect the projected future status of the resource can be developed ahead of time as a contingency plan. Measures that adjust the LAGC fishery might influence the location of catches, but since the fishery is managed by ITQs, the overall magnitude of catches will not change as a result of this amendment and thus little to no change in adverse effects to EFH is expected. Changes to the research set aside program are likely to have positive, if any, benefits to EFH, as these changes may facilitate habitat-related as well as other research.

Finally, adjustments to the boundaries of the EFH closed areas that make them congruent with the habitat closed areas in the Multispecies FMP are likely to have neutral impacts, at least for the purpose of comparing Amendment 15 to No Action. Changes to adverse effects that result from future specifications (i.e. Framework 22) that will allow rotational/access area fishing within portions of the EFH closure were not considered in this document. However, the changes to EFH closed area boundaries proposed in Amendment 15 will facilitate the effective implementation of the rotational management strategy in future years, because they allow for increased flexibility in access area allocations, particular within Closed Area I. Broadly speaking, fishing in access areas on high density aggregations of scallops is preferable from and EFH protection standpoint.

Overall, the measures are expected to have neutral to positive impacts on EFH.

**Table 145 - Summary of Impacts to EFH of Proposed Action**

| ***Measures*** | ***Change in adverse effects to EFH compared to No Action?*** | ***Notes*** |
|---|---|---|
| Measures to bring FMP in compliance with MSA ACL/AM requirements | No change in adverse effects is likely | Most measures are administrative changes; yellowtail accountability measures that shift fishing from access areas to open areas may result in increased impacts to EFH if area swept increases as a result |
| Adjustments to Limited Access General Category fishery | No change in adverse effects is likely | Difficult to evaluate – but could have effects on the location of fishing effort and the amount of area swept – however, overall catch would remain constant |
| Change to scallop overfishing definition to be more compatible with area rotation | Possible decrease in adverse effects | To extent that these changes will allow more efficient harvest of scallops, this alternative may reduce area swept and thus impacts to EFH |
| Make scallop FMP Habitat Closed Areas congruent with those in Multispecies FMP | No change in adverse effects is likely | Because year round groundfish closures are in effect, fishing effort would not shift under this action, but might be expected to shift under subsequent scallop actions |
| Adjustments to Research Set Aside Program | Possible decrease in adverse effects | May facilitate habitat-related research |
| Measures to extend specifications packages with third year defaults | Possible decrease in adverse effects | Setting year three specifications ahead of time allows for more proactive and appropriate application of rotational management strategies as compared to rolling over year two specifications when a future framework is delayed. Overall, scallop harvest strategies that best reflect the status of the resource and allow for efficient fishing are assumed to have the lowest impacts to EFH per unit of catch. |
| Items to be added to the list of frameworkable items in the FMP | No change in adverse effects is likely | Whether measures are implemented via framework amendment is irrelevant to EFH impacts |

#### 6.1.3.3 Proposed measures to avoid, minimize, or mitigate adverse effects of this action

The overall habitat impacts of all the measures combined in this action are expected to have neutral to positive effects on EFH. Relative to the baseline habitat protections established under Amendment 10 to the Atlantic Sea Scallop FMP, those impacts are negligible; relative to the No Action alternative, those impacts are marginally positive. Therefore, measures to further mitigate or minimize adverse effects on EFH are not necessary.

#### 6.1.3.4 Conclusion

The Cumulative Effects Analysis demonstrates that the overall habitat impacts of all the measures combined in this action have marginally positive impacts on habitat relative to the No

Action alternative. The action proposed under this amendment will, therefore, not have any adverse effect on EFH of federally managed species.

## 6.2 NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

### 6.2.1 Introduction

The Council on Environmental Quality (CEQ) has issued regulations specifying the requirements for NEPA documents (40 CFR 1500 – 1508) and NOAA's agency policy and procedures for NEPA found in NOAA Administrative Order 216-6. NEPA requires preparation of an Environmental Impact Statement (EIS) for major Federal actions that significantly affect the quality of the environment. The required elements of an Environmental Impact Statement Assessment (EIS) are specified in 40 CFR 1508.9(b) and NOA 216-6 Section 5.04b.1.

The Council published a Notice of Intent (NOI) to prepare this Amendment and the EIS in the *Federal Register* on March 5, 2008, which was followed by four scoping meetings in Cape May, NJ, Portland, ME, Fairhaven, MA, and Newport News, VA. The Council prepared a scoping document that outlined some of the major issues and types of management measures that the Council might consider during the development of Amendment 15. The Council invited discussion on the scoping document and any other issues of concern at the scoping meetings as well as suggestions for appropriate management measures to consider during the development of this amendment.

To prepare the DEIS, the Council held numerous meetings of its Scallop Oversight Committee, Scallop Advisory Panel, and Scallop Plan Development Team. All of these meetings, as well as several related Council meetings, were open to the public. A list of public meetings held during the development of Amendment 15 is provided in Section 7.0 of this document.

The preferred alternatives, as well as the other management measures in this document were available for public comment in July and August 2010. Following public comment period, the Council's Scallop Advisory Panel and Committee met in August and September to develop preferred action recommendations for the Council. The Council approved the final management action and voted to submit Amendment 15 to NMFS at its September 2010 meeting in Newport, RI.

Following submission of Amendment 15 by the Council to NMFS, NMFS will publish a Notice of Availability for the FEIS and will conclude the NEPA process with a Record of Decision prior to deciding whether to approve, partially approve, or disapprove Amendment 15 under the MSA.

### 6.2.2 Scoping Process

During the scoping period for Amendment 15, four scoping meetings were conducted, and numerous written comments were received. This section summarizes the issues raised during the scoping period for Amendment 15, through both the scoping meetings and written comments. The Scallop Committee, Advisory Panel, and Plan Development Team considered all of the scoping comments during the development of the range of alternatives for consideration in Amendment 15.

#### 6.2.2.1 Summary of testimony at scoping meetings

The scoping meetings were generally well attended. A summary of the comments made at each hearing are summarized below and are organized by topic. Digital audio transcripts of these meetings are available by contacting the NEFMC Office at 50 Water Street, Newburyport, MA 01950 (phone: (978) 465-0492).

- **April 1, 2008 in Newport News, VA**

The meeting was started at 7:10 pm and ran about 45 minutes. Eleven members of the public attended. The meeting was led by Dave Simpson (CT DEP, NEFMC Council Member) and Sarah Pautzke (NEFMC staff). Rick Robins (MAFMC), William Wells (Chair – Scallop Advisory Panel), and Dr. William DuPaul (Scallop Survey Advisory Panel) attended.

Comments were made by a limited access scallop vessel owner and a VIMS employee.

<u>Issue #1: ACLs and AMs</u>
The comments made regarding ACLs and AMs were that we already have ACLs and AMs in place and are already doing well by the scallop resource. We have already reduced DAS, which would be the only parameter that would be questionable if ACLs are defined as hard TACs.

<u>Issue #2: LA Capacity Reduction</u>
The industry member commented that there is overcapacity in the fleet, but asserted that we are not ready to tackle an ITQ program. He suggested we go down that road in a limited fashion and if leasing is agreed upon as a reasonable mechanism for capacity reduction, that comparable exchanges are necessary (i.e. exchanges between vessels of same horsepower because DAS are not equal between big and small vessels).

<u>Issue #3: OFD Definition Revision</u>
There were two sets of comments that came in. The first is that we've only made mistakes on a couple things (i.e. Hudson Canyon) and in terms of the access areas, we are probably not underfishing that much. Thus, the position is for not changing the OFD, but is in favor of experimenting with different fishing mortality levels on a small scale.

The second commenter made it clear that the OFD has always been problematic and that the PDT has discussed this topic at length. One reason we have not fully jumped in is because there are too many parameters, some of which are unknown (i.e. biological assumptions used in the model). He also said that an F=0.58, as depicted in the scoping presentation, would never be enacted and that it was a misleading example. He said the fishing mortality is even too high at 0.35.

<u>Issue #5: EFH Measures for Consistency with GF A13</u>
The industry member said that on behalf of the industry, they all want access into CAI and CAII areas that are currently closed due to the discrepancy between the SC and GF amendments. He

said that we should not wait for the EFH Amendment for this correction because the Amendment has been delayed before.

Issue #6: RSA

The comment made was that there is a substantial wait time between the idea and the actual work that is too long. The proposal and approval process should not take so long. Permissions need to be granted sooner.

Issue #7: Changing FY to May 1

Concern was voiced over changing the fishing year to May 1. The industry is not in favor of this idea regardless of permit type, port of origination, state, etc. It affects business plans that have been geared for a March 1 start date. Additionally, with the new biological opinion for the scallop FMP that just came out, it may make it so that the entire mid-Atlantic cannot fish for the whole summer because first the area would be opened May 1, then immediately closed for turtles, then finally opened when the bad weather rolls in come November.

- **April 2, 2008 in Cape May, NJ**

The meeting was started at 7:10 pm and ran about 1.25 hours. About twenty members of the public attended. The meeting was led by Dave Simpson (CT DEP, NEFMC Council Member) and Sarah Pautzke (NEFMC staff). Dan Cohen (Scallop Advisory Panel, Scallop Survey AP) and Robert Maxwell (Scallop Advisory Panel) were present.

Issue #1: ACLs and AMs

One comment was that ACLs and AMs are hard to make comments about because of the lack of NFMS guidance. We're pushing beyond our knowledge, which may have unintended consequences.

It was also mentioned that with regards to ACLs, that the scallop fishery should continue to receive 10% of the YTF TAC and that the SC fishery should be unaffected by the AMs of the other fisheries. Additionally, when the 10% is divided among the scallopers (i.e. the GC, LA, and LAGC programs), the AMs of each scallop program should not affect another. In other words, if the GC fishery goes over its YTF TAC, then that should not affect the LA and LAGC fisheries.

Issue #2: LA Capacity Reduction

It was argued that ITQs are good, but this is the wrong time and place and so there is no support at this time. It was voiced that leasing is an appropriate measure because it makes fishing more flexible (for example, if a vessel breaks down at the end of the FY, the owner can lease the permit to another vessel owner so harvest is not lost). However, anything that comes into play with regards to capacity reduction needs to be proportionate and equal (i.e. fair).

It was commented that permit stacking and leasing is unfair because it hurts single-boat owners, crew (can go from 2 to 1 crews if stacking is allowed onto 1 boat), and other sister industries due to reduced numbers of boats (electricians, welders, etc. will have less work or no work). It was argued that this could lead to a monopoly and it was pointed out that most of the clam permits are now owned by banks. Permit stacking can be good for a few people, especially larger boat owners, but is not good for many smaller boats.

One commenter was concerned that the IFQ might cut catch history in half. He also said that Access Area trips should not be incorporated into the determination of an IFQ allocation.

ITQs were not recommended by a commenter. It was pointed out that there are already problems for GC folks. If we do go with ITQs, they need to be consistent with the DAS and vessel size restrictions of A10. It was argued that one problem with ITQs is knowing how to cut the pie. Additionally, sectors would be ok if they are subject to A10 mortality controls.

Issue #3: OFD Definition Revision
It is not right to make a change right now because habitat closure impacts are unknown. Maybe, if we have a 5-yr horizon to eliminate peaks and valleys in harvest to better manage the market, and in conjunction with other measures, it might be alright.

Another member of the public argued that if the whole ocean was under rotational management, then it might be appropriate. As it stands now, it should just be left alone.

Issue #4: LAGC Measures
One measure that was suggested was to revisit A11 3.1.2.5.4.4 because the Council may have overviewed the allocations per vessel of 2%; it should be adjusted to 2.5% to be consistent to coincide with A11 3.1.2.5.8.1, which is 5% ownership.

A second measure that was suggested was an increase of the day limit from 400 lbs to 600 lbs per day due to current fuel prices. This would increase the lbs per day, but reduce the number of trips a GC vessel would have to make to harvest their IFQ. This increase to 600 lbs/day would reduce cost, increase profits, and increase overall economic efficiency.

Issue #5: EFH Measures for Consistency with GF A13
All comments were in support of making the EFH areas consistent between the scallop and groundfish amendments. If A15 goes through, it should include the measures necessary to make the SC closed areas consistent with the GF A13 closed areas in the event that the EFH omnibus amendment is delayed. This was agreed on by all industry members present. Additionally, it was pointed out that those three areas (NLS, CAI and CAII) are all loaded with scallops in the areas that are prohibited. One public member pointed out that the second phase of the EFH omnibus amendment is the most contentious, so we should expect delays and thus, include the measures in A15.

Issue #6: RSA's
There was support to include the changes in the RSA set-aside program listed in the scoping document.

Issue #7: Changing FY to May 1
It was argued by all that May 1 should not be considered at all. The biggest problem now, from one point of view, is that NMFS does not know what current research platform will be utilized,

although it will probably be the R/V Sharp. Based on that, in addition to economic reasons because the market is geared towards a March 1 start date, there is no value in changing the FY start date, especially in light of the new turtle biological opinion with its perceived turtle interaction issues. Also, a change in the FY would result in harvest at the time of year with the lowest yield. One comment was that the draggers were supposed to be March 1, but due to gear issues had their fishing year adjusted to May 1. Thus, it is not the scallopers that are out of sync with the wrong start date, but in fact the draggers who should adjust to the scallop fishing year start date.

Additional Comments
Comments unrelated to the actual scoping document included a question about the April 4th deadline with regards to scoping, especially since the last scoping hearing is April 8 (one person suggested accepting comments until April 15th), and a question with regards to FW21 setting specifications for 2010 only (as opposed to two years). It was pointed out that annual specifications would be good. The demarcation line was also talked about in reference to whether declaring into the fishery at the demarcation line or the port, and whether the demarcation line can be extended farther away from the coast to allow transit between the coast and the demarcation line.

The final comment of the evening was that there should be a rule against anchoring in a Access Area fishing zone because, for example, the NLS gets packed toward the end of the YT TAC and boats will anchor to shuck their scallops in the way of other boats that are fishing, which is a dangerous situation.

- **April 7 in Portland, ME**

The meeting was started at 7:05 pm and ran about 40 minutes. About eight members of the public attended. The meeting was led by Dave Simpson (CT DEP, NEFMC Council Member) and Sarah Pautzke (NEFMC staff). Terry Stockwell (NEFMC Council Member) and Kevin Kelly (Scallop Survey Advisory Panel) were present.

After the presentation, clarification was asked about what indications existed with regards to excess capacity in the LA fishery, what the Mid-Atlantic public had to say, and if changing the NGOM measures requires an amendment or framework. One indication of excess capacity is the number of idle boats. Operators have 3 boats and only 2 crews and are keeping 3rd boat around just because it gives them fishing rights. The Mid-Atlantic folks had some concern about capacity reduction – some were against it and others were for it. And lastly, a Council member suggested that in order to change the way TAC is developed for the NGOM would probably require an amendment.

<u>Issue #1: ACLs and AMs</u>
It was suggested that ACLs could be allocated through a sector or an IFQ to maintain control of the quota and as long as the TAC is not run over, the remainder should roll-over into the following year. With regards to bycatch, we need to create a target and set up a bycatch TAC that is associated with a particular scallop TAC. The TAC should be checked on more than once a year to ensure we don't exceed it.

Issue #2: LA Capacity Reduction
Not a lot of excess capacity in Maine, although there is potential for it, and it is being addressed at a state level because it is mostly a state-waters fishery. One concern that was voiced was that capacity reduction will need to be done in a way that does not negatively impact the small businessmen, thus limits will need to be placed on permit stacking, DAS leasing, etc.

Issue #3: OFD Definition Revision
The new area-based OFD was supported by a fisherman because he is against averaging the open area and access area and closed area fishing mortalities because of the overfishing that is probably occurring in the open areas (as a result of the averaging).

Issue #4: LAGC Measures
Sectors have potential and should be easier than for groundfish. With regards to rollover of the IFQ, it would depend on stock status because it might result in catching more than the TAC if too much rollover is allowed.

Several members of the public made comments related to the NGOM Program developed by Amendment 11. It was argued that the NGOM TAC is based solely on federal landings, not state and federal landings, which is what it should be based on, especially since both current state and federal landings will count against this determined TAC. The NGOM resource should be surveyed for incorporation into the NGOM TAC development. NGOM and other areas should be treated the same. Most surveys are done south of 42. More research should be done north of that latitude.

Also, fishermen must choose between a federal and state permit. If the NGOM TAC is reached prior to Dec. 1 (start of ME state scallop season), then the NGOM permit holders will be excluded from the state fishery.

It was argued that all scallop vessels in the NGOM should abide by the 200 lb daily limit and have their landings applied towards the NGOM TAC instead of allowing LA vessels unlimited access to the NGOM resource until the NGOM TAC is filled.

Scallops caught in the NGOM should not be applied toward an IFQ that applies outside that area and vice versa. The areas were established as separate entities and should be managed as such.

Issue #5: EFH Measures for Consistency with GF A13
One fisherman stated that EFH areas should remain closed because it was closed as EFH, and thus should remain so, with limited to no fishing. However, another argued that the areas should be consistent between the GF and SC FMPs.

Issue #6: RSA
One commenter suggested that we should have EFH and economic impact studies as part of the whole system to help rebuild both scallops and groundfish. It was also mentioned that rollover of the RSA is a good thing. The Maine DMR Scallop Advisory Council is interested in pursuing research projects that aim to better understand the NGOM scallop resource.

Issue #7: Changing FY to May 1
Some suggested starting the FY on May 1 is a good idea to match it with groundfish and make it more compatible with science needs.

Additional Comments
Area rotation should continue; it works well with the open access areas and closed areas.

- **April 8, 2008 in Fairhaven, MA**

The meeting was started at 7:10 pm and ran about 80 minutes. About thirty members of the public attended. The meeting was led by Dave Simpson (CT DEP, NEFMC Member) and Sarah Pautzke (NEFMC staff). Ray Starvish, Jr. (Scallop Advisory Panel (SAP)), Richard Taylor (SAP), and Ron Enoksen (SAP) attended.

Issue #1: ACLs and AMs
ACLs should be divided up separately amongst the scallop fisheries and definitely should remain separate from the GF fishery. If the ability of the scallop fishery to fish is affected by the GF fishery, this would not be a good result. The scallop fishery should get its own YTF TAC and not be shut down by the GF fishery.

One idea offered was that there should be one ACL for the scallop fishery that is subdivided between the LA, LAGC, and incidental fisheries; NGOM should remain a separate ACL. Additionally, the scallop fishery should get an ACL from any fishery in which it participates, including YTF. Lastly, it was mentioned that the GF fishery should not be in charge of managing the YTF ACL allocated to the scallop fishery. We should not use this amendment to modify allocations between GC and LA fisheries. The implementation of a buffer between the TAC and the ACL is not a legal requirement, and the scallop fishery is already tightly managed with an undeclared buffer implemented through the fishing mortality target of 0.2 of the CASA model. The buffer is already there for accountability.

Another comment was that ACLs should be applied on an individual basis to incorporate as much separation as possible, even down to the individual boat owner if possible.

Issue #2: LA Capacity Reduction
One member of the public commented that consideration of IFQs could be removed from Amendment 15 if A15 gets unwieldy. However, most were in agreement that if capacity reduction goes forward, it should be ok to stack like permits on a boat (though the number of permits and boats varied among commenters, generally it was argued the permits needed to be alike). Specifically, 2 permits stacked on 1 boat with like baselines was mentioned more than once. It was argued that allowing 2 permits on 1 boat with like baselines does not increase capacity because the baseline would hold that in check, such that the permits can't go to bigger and better vessels and the 5% limit will prevent "overconsolidation." One person did say that they are in favor of permit stacking with no permit restrictions. It was also mentioned that the permits should be able to retain their original identity so they can be separated again in the future if desired.

Another member of the public argued against capacity reduction. She argued that a smaller enterprise (such as 1 boat) cannot compete with a boat that has more DAS because they've stacked their permits. She included testimony from 10 years ago with regards to this issue. Also, another commenter said that DAS and permit transfer programs are IFQ programs that will increase capacity because permits will move onto boats that are more efficient.

Issue #3: OFD Definition Revision

One member of the public commented that this item could be removed from Amendment 15 if A15 gets unwieldy because it is probably not a real problem and he is nervous about allowing a higher fishing mortality limit in the access areas, which was a concern echoed by other fishermen. Another individual pointed out that Amendment 10 provides flexibility in the OFD to allow going over F slightly in access areas and that this revision is probably not necessary. He was also concerned about how this new OFD would interact with ACLs. One commenter added that she wants to see better and timelier science before agreeing to a new OFD.

Issue #4: LAGC Measures

There were no comments with regards to this issue.

Issue #5: EFH Measures for Consistency with GF A13

Many argued to include this in Amendment 15 because it is taking too long for the EFH Committee to move along their amendment and the result is that scallops are locked up from harvest, especially in the area north of the cod HAPC. Another individual's point of view was that this is a scallop issue, thus it should be resolved via the Scallop FMP. Another argued that we may not need new OFD if the EFH measures are made consistent.

Another argument for making these areas consistent to allow fishing in the currently closed areas (by changing them to access areas) was that research has determined that there is limited damage to the environment in the current EFH areas caused by scallop fishing and that after fishing, other taxa are relatively un-impacted by fishing because the area is so turbulent anyhow.

Issue #6: RSA

One comment was that improvements to the RSA program were supported if it is not complicated. Additionally, dividing 2% up to allocate some for surveys in open and access areas was supported, as was a carry-forward of unused pounds and multiyear projects.

Another comment was that funding of NMFS surveys should be separate from the RSA industry surveys, but it appears like NMFS is looking to subsidize their own budget through RSA funds. It was argued that more transparency is needed in the RSA funding decisions. A mechanism should be established to return unused RSA funds to scallopers, either as DAS in the fall, an increase in access area landings, or a rollover of the funds. With regards to timing of the RSA proposal submissions, currently this happens several months into the FY, which makes getting everything done during the FY tight. The suggestion is for the timing of RFPs and rewards be done early enough that the whole FY is available for research, providing a 12 month window.

Issue #7: Changing FY to May 1

One member of the public commented that this item could be removed from Amendment 15 if A15 gets unwieldy. It was also pointed out that we have not yet considered the turtle biological opinion that includes "no jeopardy" for turtles. This includes two fishing restriction options starting the summer of 2010 that will either reduce the fishery from June through October or May through October. The problem then is that if the fishing year shifts to May 1, it may only be open 1 day before it is closed or severely reduced in the mid-Atlantic for the summer.

There was a comment in support of changing the FY to May 1 if it improves the overall effectiveness of scallop management.

#### 6.2.2.2 Summary of written scoping comments

Two dozen written scoping comments were received between March 5 and April 4, 2008. All the comments have been summarized by the overall topics presented in the scoping document. The summary below identifies specific measures that were suggested regarding the scoping issues, and summarizes a sample of other comments received about scallop management in general. This summary is not intended to reflect every comment that was received. The letters and scoping meeting summaries should be referenced to gain a better perspective on individual comments, ideas, and suggestions. The actual scoping comments are included in Appendix I.

<u>1) ACLs and AMs</u>
Many members of the public explained that they had a tough time providing comments about this topic because of the lack of guidance from NMFS. However, some asserted that we already have ACLs in our DAS and access trip allocations that are set at a level that prevents overfishing. Others provided comment about how we should break down ACL allocations. It was commented that the allocations between the limited access and general category fisheries should remain the same (i.e. no modifications at all) with have their own ACLs and AMs. Further, the LA, LAGC, and incidental scallop fisheries should have their own sub-allocated ACLs and AMs, as should NGOM. One suggestion was to break it down even further so that ACLs and AMs are allocated on an individual basis.

It was argued that ACLs and AMs should count all sources of mortality, limit mortality to an acceptable supportable level, end overfishing, and minimize bycatch. AMs should be developed that account for bycatch in the scallop fishery, such as an ACL and AM for the YTF fishery. This should be done by including hard ACLs for scallops and bycatch species that are allocated to sectors (LA, LAGC, etc) of the fishery with AMs that effectively monitor and account for all sources of mortality to ensure ACLs are not exceeded. It was argued that no additional precautionary buffers should be built in between the ACL and TAC because the fishing mortality limit is already lower than it needs to be, which should count as an AM.

<u>2) Rationalization of the Limited Access Fishery</u>
Although many members of the public, including industry members, support rationalization, the avenue suggested by which this should proceed is varied. Many are in favor of permit stacking. The common theme was having the ability to stack 2 permits onto 1 boat, which would then receive a double allocation of days, especially with the limited number of DAS currently allocated. However, it was put forth that permit stacking should not be done at the harm of small boat/business owners, but instead should have limits so that large businesses cannot outcompete

and force smaller businessmen to sell out. Additionally, if the Council chooses to progress forward, it should not do anything that undoes the underlying open area DAS and access areas in the LA fishery. People also argued that with permit stacking, the permits should retain their original identity so that they may be split out again in the future if desired, instead of allowing the jumbo permit allowed in the groundfish fishery.

Whether the baseline restrictions should be maintained was argued. One person suggested that the baseline rule should be repealed to ensure that the stacking process gravitates toward newer, safer vessels. Also, permit stacking without vessel baseline restrictions will allow the most flexibility in choosing boats and partners because access area management has created de-facto equality among permit holders and scallop biomass is the limiting factor for open areas. Another provided that the NMFS should evaluate the impact of not retaining the current vessel replacement criteria and upgrade restrictions because this may or may not have an impact; however, they asserted that they agree that a rise in capacity should not occur. Fishermen said that currently crews have already been consolidated by having one crew work 2 boats, such that some did not believe that there would be a reduction in jobs. It was argued it would be advantageous to have the one crew stay on the same boat all year. Additionally, much of the equipment is transferred between two boats. Inactive boats are extremely costly and wasteful and it would allow the retirement of older, less safe vessels. Capacity reduction via permit stacking will save on fuel and ice costs and free up dock space.

Another few options provided toward capacity reduction were IFQs, DAS leasing, and sectors, while maintaining current mortality controls. While being for capacity reduction, one individual argued that we should not adopt IFQs. One comment was that although they were against the ITQ alternative for capacity reduction, if capacity reduction is required, it should not undo current allocation controls.

Some people are against capacity reduction and think we should forgo the effort at this time. One argument is that permit stacking will create a lack of accountability in the scallop industry and hurt the smaller business owner. Permit stacking will also have a negative economic impact on economy through elimination of jobs. A fear among small business/vessel owners is that permit stacking will lead to mega-boats. A suggestion to control that was to implement an industry or government by-back or a hybrid of the two. One person said that they are against IFQs, transfer and leasing DAS, permit stacking, and sectors (he is against sectors because no individual vessel or group of vessels should receive a greater allocation than anyone else).

<u>3) OFD Revision</u>
All comments received were against revising the overfishing definition at this time. One commenter said he would like us to complete the transition to total rotational area management and controlled access to all managed areas, which would increase CPUE and minimize bottom contact before embarking on an overfishing definition revision. Another concern was the potential negative impacts of an increased fishing mortality limit in access areas. Another argument was that changing the overfishing definition such that it might reduce the mortality limit in open areas is unnecessary because overfishing is already being prevented through the conservative levels of DAS allocations.

4) LAGC Modifications

Scallop Amendment 11 approved an IFQ program for general category vessels. Several specific ideas were raised during the A11 process but were delayed for consideration because they would require more time for development and analysis. A15 is considering 1) a rollover allowance for IFQ holders if they are unable to harvest their full quota in the fishing year, 2) an allocation of IFQ by area, 3) alternative methods for calculating the NGOM TAC, and 4) accepting sector applications. One comment that was made was that all adjustments to the general category fishery need to be in line with the program approved in A11 (although they were un-opposed to the four considerations) and another person said that tweaks to the GC fishery should not upset the balance struck in A11.

A rollover allowance for IFQ permit holders was supported, but one suggestion was to limit the rollover to a percentage of the total to avoid "banking" of IFQ allocation. Another person furthered that comment by suggesting a maximum of 15% rollover allowance into the next fishing year only.

It was commented that IFQ by areas is good for nearshore areas, but may not be cost efficient for offshore areas unless it is approved with another measure such as sectors. Another was opposed to ITQ by areas, asserting that there is no reason for area-by-area ITQs for the LA vessels that qualify for GC ITQ allocations.

With regards to alternative methods for calculating the NGOM TAC, it was commented that landings from the state waters should not count against the NGOM TAC so that fishing can still happen in state waters even when the federal TAC has been reached. GC scallops caught in NGOM should not apply toward an IFQ tailored to scallops outside the NGOM. One person said the NGOM TAC needs to be scrutinized in relation to LA landings. Also, it was commented that all scallop vessels should abide by the 200 lb daily limit in the NGOM instead of allowing the LA vessels 18000 lbs while restricting those only with state permits. Two commenters said they would like to see a survey / stock assessment done of the NGOM scallop resource as soon as possible.

One commenter supports the inclusion of GC sector applications in this Amendment and another supporter of including sector applications said that sectors should have a stipulation of a minimum number requirement of 5 catch vessels; however, we are just looking at whether to accept application, not addressing modifications to the program.

A comment provided that was not listed as a consideration in A15 scoping is an adjustment of allocation per vessel to 2.5% from 2% to be consistent with 3.1.2.5.8.1 in A11, which is 5% ownership restriction.

One last comment under this section was a request of consideration for increasing or eliminating the 400 lb GC daily possession limit due to the escalating cost of fuel and current economic crisis. Another commenter agreed with an increase in poundage to 600 lbs would reduce expenses and increase profits and overall economic efficiency.

5) EFH Closures of SC FMP Consistent with GF FMP

Many members of the public said that this is important to keep in A15, saying that it is time that the EFH discrepancies between the two FMPs be addressed to make them consistent between the scallop and groundfish plans. One commenter provided that he supports this because scientific analyses support the decision based on the finding that pulse perturbations, such as done by scallop fishing, may alter the seafloor community less than the natural dynamic conditions on Georges Bank, therefore there is not much anthropogenic impact. Many others said that they support this because so much of the scallop resource is locked in these closed areas and the only reason these areas are not open is because the previous action was done in a framework instead of an amendment. Fear of the EFH omnibus amendment taking too long was also voiced.

However, some commenters did not support this being considered in this amendment because this action should be done by the EFH omnibus amendment.

6) RSA Program Improvements

Many people supported including RSA program improvements in this amendment. They were in support of streamlining, multiyear programs, and subdividing the 2% set-aside to guarantee money to access area surveys that would be used to estimate TACs under rotational area management. With regards to streamlining, this was heavily supported, especially including an improved review process for proposals and improved timeliness. One person said that NMFS should not be allowed access to RSA funds for their surveys. Also, RSA funds should be used solely for projects that will produce results with benefits to the scallop industry and that the proposal review process should be transparent. A comment was that efforts should be made to open the process to stakeholder observation and comment. It was asserted that the SSAP is a good mechanism for industry participation in the decision-making process.

One commenter, however, said that the RSA program should be eliminated or managed by the permit holders.

7) Change FY to May 1 (from March 1)

Only a couple comments were provided in support of changing the fishing year to May 1, saying they agree with changing the current start date if it improved the effectiveness of scallop management.

However, most fishermen were against changing the fishing year to May 1. One argument is that it will push more effort into the time of year when they're at most risk for turtle catch and especially in light of the new turtle Biological Opinion. The biological opinion suggests reducing the scallop fishery in the mid-Atlantic, either from May-November by 70% or June-October by 50%, so concerns were voiced about the fishery opening May 1 then immediately closing due to the Biological opinion requirements. Another concern is that it will have a negative economic impact because all business plans are built around the March 1 start date. Lastly, one person said they don’t want it changed due to the natural cycle of scallops.

8) Other Comments

One commenter wants to cut all scallop quotas by 50% this year, then 10% every year thereafter.

A second comment was a request that Scallop A15 include an investigation into starfish predation and roe-on landings from closed areas to increase potential landed production. It was commented that ACLs and capacity cannot be addressed until this is understood and incorporated.

It was requested that A15 include a measure that requires all science and committee meetings to be broadcast live on the internet.

It was requested that A15 should address oceanic man-made chemicals that affect scallops, including acid rain and jet fuel.

Lastly, it was commented that A15 should include measures to address bycatch of threatened and endangered sea turtles, as directed by the recent Biological opinion.

### 6.2.3 Agencies and persons consulted

Questions concerning this document may be addressed to:

Mr. Paul Howard, Executive Director
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 10950
(978) 465-0492

Amendment 15 was prepared and evaluated in consultation with the National Marine Fisheries Service and the Mid-Atlantic Fishery Management Council. Members of the Scallop PDT prepared and reviewed portions of analyses and provided technical advice during the development of the Environmental Assessment. The list of Scallop PDT members includes:

**Table 146 – List of Scallop PDT members**

| Scallop Plan Development Team |
|---|
| Deirdre Boelke, PDT Chair, NEFMC |
| Emily Bryant, NMFS SF |
| Peter Christopher, NMFS SF |
| Rula Deisher, USCG |
| William DuPaul, VIMS |
| Demet Haksever, NEFMC |
| Dvora Hart, NEFSC |
| Kevin Kelly, ME DMR |
| Erin Kupcha, NMFS Observer Program |
| Jessica Melgey, NEFMC |
| Kimberly Murray, NEFSC |
| Cate O'Keefe, SMAST |
| Julia Olson, NEFSC |
| Charles Adams, NMFS FSO |
| Sarah Thompson, NMFS NEPA |
| Carrie Upite, NMFS PR |

In addition, other individuals contributed data and technical analyses for the document, Amy Van-Atten (NMFS Northeast Observer Program); Michelle Bachman (NEFMC staff – impacts on essential fish habitat); Tom Nies and Sarah Pautzke (NEFMC staff), and Woneta Cloutier (NEFMC staff – administrative assistant for Scallop FMP).

***Scallop Advisory Panel***

Gib Brogan, Wayland, MA
Scott Ryan Bailey, Millville, NJ
Ron Enoksen, New Bedford, MA
James Fletcher, Manns Harbor, NC
James Gutowski, Barnegat Light, NJ
Gary Hatch, Owls Head, ME
Peter Hughes, Cape May, NJ
Robert Keese, W. Chatham, MA
Kirk Larson, Barnegat Light, NJ
Michael Marchetti, Wakefield, RI
Robert Maxwell, West Creek, NJ
Ray Starvish, Jr., Fairhaven, MA
Edward Welch, Mattapoisett, MA
William Wells (Chair),Yorktown, VA

The following agencies were consulted during the development of this amendment, either through direct communication/correspondence and/or participation on the Scallop Committee or PDT:

- NOAA Fisheries, National Marine Fisheries Service, Northeast Regional Office, Gloucester MA
- Northeast Fisheries Science Center, Woods Hole MA
- Mid-Atlantic Fishery Management Council

### 6.2.4 DEIS and FEIS Circulation List

Initially, the Council distributes the Draft Amendment 15 document and DEIS to individuals who contributed to the development of this document, including Scallop PDT and AP members. These individuals are listed in the previous section of this document.

The following parties are on the DEIS distribution list for Amendment 15:

| | | |
|---|---|---|
| Office of Environmental Affairs<br>Department of Interior<br>1849 “C” Street, N.W.<br>Washington, DC 20520 | District Commander<br>First U.S. Coast Guard District<br>408 Atlantic Ave<br>Boston, MA 02210 | Office of Marine Conservation<br>Department of State<br>2201 “C” Street, N.W.<br>Washington, DC 20520 |
| Marine Mammal Commission<br>4340 East-West Highway<br>Bethesda, MD 20814 | Endangered Species Division<br>U.S. DOC/NOAA<br>1315 East-West Highway<br>Silver Spring, MD 20910 | Enforcement Division<br>U.S. DOC/NOAA<br>1315 East-West Highway<br>Silver Spring, MD 20910 |
| Domestic Fisheries Division<br>U.S. DOC/NOAA | US EPA Region 1<br>One Congress Street, 11th | US EPA Region 2<br>290 Broadway, 25th Floor |

| | | |
|---|---|---|
| 1315 East-West Highway<br>Silver Spring, MD 20910 | Floor<br>Boston, MA 02203 | New York, NY 10007 |
| US EPA Region 3<br>1650 Arch Street<br>Philadelphia, PA 19106 | US EPA Region 4<br>61 Forsyth Street<br>Atlanta, GA 30303 | |

In addition, as part of the review process for consistency with applicable laws such as the CZMA and the ESA, the Council distributes the Draft FMP/EIS to the following coastal states and agencies:

Maine Coastal Program
New Hampshire Coastal Program
Massachusetts Coastal Zone Management
Rhode Island Coastal Resources Council
Connecticut Office of Long Island Sound Programs
New York Division of Coastal Resources
New Jersey Division of Coastal Resources
Delaware DNREC
Maryland Coastal Zone Management Division
Virginia Coastal Resources Management Program
North Carolina Division of Coastal Management
Pennsylvania Department of Environmental Protection
South Carolina Ocean and Coastal Resources Management
Mid-Atlantic Fishery Management Council
Atlantic States Marine Fisheries Commission

In addition, the Council prepares a notice to its "Interested Party" list for Atlantic sea scallop that announces the availability of the DEIS and public hearing document and announces the schedule for public hearings. A Notice of Availability of the DEIS is also published in the *Federal Register*. At that time, anyone on the "Interested Party" list or any other member of the public may call the Council office and request a copy of the DEIS for their review. There are over 500 individuals on the "Interested Party" mailing list for Atlantic sea scallop. The Council also made the Amendment 15 DEIS available for downloading through its website (www.nefmc.org).

A similar process will be used by the Council for distribution and circulation of the final Amendment 15 and FEIS document.

#### 6.2.4.1 DEIS public comments and responses

More than 150 people attended six public hearings held from Maine to Virginia. These hearings were held in July 2010. A summary of the public hearings are in Section 6.1.2.1. In addition to the public hearings held on Amendment 15, a requirement of the Magnuson-Stevens Act for EISs, detailed written comments were submitted on this action as well while Amendment 15 was available for public comment between July 9, 2010 and August 23, 2010. The full DEIS and public hearing document were available on the Council website and copies were made available by request. Within the public hearing document two dozen specific questions were included to help focus public comment on the wide range of alternatives under consideration. Comments and questions raised in written statements have been summarized using the same questions to help organize the written comments.

About 65 individual comments were submitted including two "form letters." Over 130 individuals signed one of the form letters (Comment #8), and over 20 signed another (Comment #28). In addition, two comments were submitted after the deadline, but are included in the package of written comments.

The vast majority of comments focused on providing input on what the Committee and Council should consider for the proposed action, and a dozen or so included specific questions or raised issues that should be clarified about the alternatives or analyses currently in the DEIS.

In very general terms, most comments focused on the measures to address excess capacity in the limited access fishery. The majority of comments, about 40 individual comments and over 130 anti-consolidation form letters, oppose stacking and leasing alternatives, citing potential social impacts included in the DEIS as well as challenging whether these measures fully comply with all the National Standards of the Magnuson Act. On the other hand, 15-20 comments were also received from individuals that support stacking, and in some cases leasing over stacking. Another 15-20 comments were neutral on stacking or did not comment on those alternatives. In a nutshell, commenters that supported stacking and/or leasing alternatives cited reduced costs, retirement of older vessels, reduced congestion at docks, and more efficient use of other resources such as fuel, paint etc. Those that opposed stacking generally felt that the mortality adjustment factor (5-11%) was too low, and most that support stacking felt it was too high. A handful of commenters noted that stacking and leasing could have unintended consequences on other fisheries in the region and requested that the DEIS investigate this further.

Some commenters did provide input on the ACL and AM alternatives in A15. There was general support for the ACL structure and range of AM measures under consideration. Most commenters supported the idea of improved accountability and reduced risk of overfishing with the implementation of AMs. A couple suggested that other species caught in the scallop fishery should be considered, and a few voiced concern about the effectiveness of limited access AMs in terms of ensuring that general category allocations are not affected.

Many comments were submitted related to the measures under consideration to improve the general category IFQ program; however, input was mixed. Some supported increasing the possession limit, and some adamantly opposed such a change. There was some support for IFQ rollover and increased harvest limits per platform, and some opposition. Similarly, input on CFAs was mixed.

There was very little support for changing the overfishing definition and almost no support for changing the fishing year to May 1. Many supported modifying the EFH closed areas in A15, and two comments opposed it citing that the EFH Omnibus Action is the proper place to address that when it is passed. Lastly, there was general support for improving the RSA program and some provided specific advice on which measures to select. Comments from NMFS are addressed separately from public comments in Section 6.2.5.5.

All written comments were reviewed by staff and individual questions or comments about specific alternatives have been included below. Comments that expressed support or opposition have not been included in this list, only comments that necessitate a response.

### 6.2.5 Response to Comments

#### 6.2.5.1 PURPOSE 1 – Consider measures that will implement annual catch limits (ACLs) and accountability measures (AMs) to prevent overfishing

- *Support for separate NGOM ACL but unused portion should annually rollback to LAGC fleet for the next year if the NGOM fleet does not harvest that allocation.*

Response: The Council did not consider this option because the TAC for the NGOM is specific to that area. Unused NGOM TAC cannot be rolled to a different permit category in a different area because that could increase fishing mortality in that area. If NGOM TAC goes unused in one year that biomass will be available in future years and will contribute to future biomass. Vessels with LAGC IFQ permits are allowed to fish in the NGOM area, provided they comply with the special gear and landings requirements for that area.

- *Concern that incidental catch coming from ABC=ACL section as well as LA-sub ACL; that allocation should not come off both.*

Response: The word incidental is used twice in the ACL flowchart and that may be why this commenter is confused. Incidental mortality is referred to in the box related to setting OFL and that is in reference to incidental mortality caused by fishing – for example, scallop crushed by the dredge. On the other hand, a specific allocation is made to vessels with a LAGC incidental permit. This 50,000 pound incidental catch target TAC is in reference to mortality associated with landings from vessels that have this permit. A vessel with an incidental permit can land up to 40 pounds of scallops per trip.

- *One suggestion was made that the LA sub-ACL should be further divided between full-time, part-time, and occasional permits because in his opinion the part-time fleet is harvesting more scallops than anticipated and that could lead to the full LA sub-ACL being exceeded.*

Response: The LA sub-ACL is not subdivided between the various permit categories. Instead, when allocations are set to divide the LA sub-ACL it is done in terms of full-time equivalents. All part-time and occasional permits are converted into full-time equivalents in order to set allocations. For example, currently there are 349 permits, but 327 full-time equivalents when part time and occasional permits are combined to equate to full-time vessels. The LA sub-ACL can be further divided in the future if this becomes an issue in the future.

- *One commenter voiced concern about the disclaimer for the LA AM. It was argued that it is inherently unfair and runs counter to the Council's intent in establishing two separate portions of the fishery.*

Response: After the public comment process was over the scallop advisory panel, Committee, and full Council considered this issue. Ultimately, the Council agreed that if the LA disclaimer was triggered, some compensation should be made to increase fishing opportunity for LAGC vessels if biomass was underestimated. Alternative 3.2.3.9.2.1 was developed and included in the EIS at the final Council meeting.

- *One comment letter suggested a clarification: "if the scallop AM is triggered, that any DAS reduction be rounded down if the calculation results in fraction of a DAS less than 0.5 and that no DAS reduction is to be taken if the overage would result in less than one full DAS in the subsequent year."*

Response: This comment was considered and the Committee clarified that partial DAS reductions are feasible. NMFS confirmed that partial DAS can be utilized, so if an AM is triggered that requires a partial DAS reduction that is what will be implemented, DAS will not be rounded down or up.

- *One letter argued that AMs should not trigger unless OFL level of F is exceeded, and not when the ACL level of F is exceeded.*

Response: The Council chose to have AMs trigger when ACLs are exceeded so each fishery is more responsible for their sub-ACL. Furthermore, having AMs trigger when ACLs are exceeded rather than OFLs is more precautionary and consistent with national guidance.

- *Summer flounder mortality is very large from the scallop fishery and may affect the stock. Commenter suggests that similar to yellowtail flounder, there should be a requirement to retain summer flounder and this action should account for mortality of this stock.*

Response: Amendment 15 analyzed the level of summer flounder bycatch in the scallop fishery in Section 3.2.3.11.1. It was decided that this FMP will not implement a sub-ACL for a non-target species, until the primary FMP does so. Therefore, the summer flounder FMP does account for this source of bycatch. In the future, the summer flounder FMP could be modified to include a specific sub-ACL for the scallop fishery. Similarly, a requirement to retain summer flounder would have to be considered under the summer flounder FMP; the scallop FMP cannot implement such a measure.

- *Recommend that LAGC fleet not be subject to YT flounder AMs since effort and bycatch represent an insignificant amount of bycatch.*

Response: The Council considered this comment and ultimately agreed. The final YT AM measure selected included a provision that general category trips in exempted areas would not be subject to the YT AM if it were triggered.

- *Another letter argued that all year 3 AMs are contrary to agency guidance.*

Response: The Council did consider three year AMs because initially it did not seem that subsequent year AMs were feasible. After public hearings the Council did include an option for the YT AM that would be effective in the subsequent year, Alternative 3.2.3.11.2.1.1. Several additional monitoring requirements were added to make this subsequent year AM workable.

- *The Council needs to clarify the relationship between the overall yellowtail ACL for the scallop fishery and the access area allocation of 10 percent of the overall yellowtail ACL. Is the 10-percent access area allocation intended to be part of the overall yellowtail sub-ACL for the scallop fishery?*

Response: The FEIS has been clarified so that it is clear that the 10% of the overall yellowtail ACL in access areas is part of the overall sub-ACL for the scallop fishery. In addition, that cap still remains for access areas.

- *One commenter argued that surveys of access areas should be conducted year round to identify areas of high seasonal concentrations of YT, either by NMFS, industry funding, or a study fleet.*

Response: This comment was not specifically addressed in A15 because it is not an AM, but it was noted and may come up in future actions related to future RSA priorities and/or future actions related to reducing YT bycatch in the scallop fishery.

- *Another comment argued that loggerhead turtles should be considered in the ACL/AM context in Amendment 15 with associated limits on bycatch. It was also suggested that large amount of sponges and sea stars are observed on scallop trips so these species should also be considered as ecosystem component species.*

Response: The Council did specifically consider whether loggerhead turtles should be considered as a non-target species in the ACL/AM context in Amendment 15. During development of Amendment 15, NMFS advised the Council that species that are not managed under an FMP do not have to be identified as non-target species (i.e. protected resources). Furthermore, the Final Rule with NMFS guidance for implementing ACLs explained that turtles would not qualify as an ecosystem component species because they are managed under the Endangered Species Act (ESA). Section 3.2.1.1 of this action includes more information about why the Council decided not to include loggerhead turtles as a non-target species, or an ecosystem species in the ACL/AM context of Amendment 15.

- *One commenter argued that there are places in the document that still refer to Fmax as 0.29 despite the fact the assessment has updated the reference point (Fmsy = 0.38).*

Response: The DEIS was published before SAW50 and the SSC approved new reference points for the Scallop FMP. All references to $F_{max}$ and $B_{max}$ have been updated with $F_{msy}$ and $B_{msy}$ in the FEIS, including the new values for these terms.

- *One commenter argued that the Council did not adequately analyze which bycatch species to potentially include as non-target stock in the Scallop FMP. It is suggested that this should have been based on a full analysis of catch and bycatch in the scallop fishery using more updated information. Specifically, a full discussion and assessment of the catch of skates, monkfish, summer flounder, and winter flounder species was requested. Lastly, a clear description of the "threshold" for what constitutes a non-target stock is lacking.*

Response: The DEIS did fully evaluate which bycatch species to potentially include as non-target stocks in the Scallop FMP using available information in Section 3.2.3.11.1. Catches of skates, monkfish, summer flounder and winter flounder were included in that analysis. Ultimately, the Council decided for this FMP that non-target stock ACLs would not be developed in this FMP until a primary FMP allocated one to the scallop fishery, like the YT sub-ACL under Multispecies Amendment 16. The DEIS explains that the PDT used the 2008 SBRM Report, Wigley et al. 2008 and various assessment documents such as GARM III and the Skate Datapoor Workshop report to identify potential non-target species. These were the most updated reports available when the PDT identified recommendations. The DEIS explains that if an "appreciable" amount of total discards is from scallop gears, then a non-target ACL may be warranted. The PDT discussed that more than 5% of total landings caught as discards in the scallop fishery would qualify as appreciable; that is the "threshold" used by the PDT and Council. Several species were identified as having more than that 5% of total estimated catch from discards in the scallop fishery, but as it is explained in the DEIS, the Council decided that the Scallop FMP will not identify ACLs for non-target species until they are first identified as such by the primary FMP that manages that species. Lastly, the Council can always later include other species as non-target or ecosystem species if more information becomes available.

#### 6.2.5.2 PURPOSE 2 - Address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource while considering impacts on various fisheries and fishing communities

- *The model used to develop the fishing power adjustment alternative does not reflect changes that are already occurring in the fishery under current rules. Specifically, LPUE has been steadily increasing, and absent stacking/leasing LPUE will likely continue to increase. The model does not show a comparison between the expected increase in LPUE occurring under the current upgrade and replacement rules versus and increase in LPUE from stacking/leasing.*
  Response: The production model estimated the relationship between LPUE, the vessel characteristics such as HP and length, biomass, DAS and gear (small dredge, trawl) in order to derive adjustment factors when vessels stack and lease DAS from other vessels with different HPs and lengths. This model was estimated using the annual vessel data from 2000 to 2008 and taking into account the changes in the biomass and the vessel upgrades/replacements that already occurred during those years. The preliminary results of the production model that was later updated using the 2009 data were not significantly different from the model that included the vessel data 2000 to 2008. Thus the production model and the fishing power and mortality adjustment formulas reflected the changes in LPUE due to the vessel upgrades/replacements, biomass and changes in the open area DAS allocations up to the 2010 fishing year.

  Although the production model could be used to predict the future increase in LPUE if the data on the vessels that already upgraded/ made replacements and the future biomass levels were available, the main goal of the analyses was to estimate how stacking/leasing would affect scallop landings whether the vessels were upgraded or not. There is no question that with vessel upgrades (larger HP and length) and replacements (newer vessels), overall landings and LPUE would increase. However, stacking/leasing would still result in increased efficiency and higher landings for the scallop fleet in the absence of fishing power and mortality adjustments --or if these adjustments were lower than necessary in keeping fishing mortality constant.

  There were no measures in Amendment 15 that would change the rules regarding upgrading and vessel replacements; thus, these existing rules constituted no action and did not need to be analyzed. On the other hand, Section 3.2.3.8.1 of Amendment 15 provided some scenario analyses about how landings would have changed if a certain proportion of the fleet upgraded to get some insight to the factors that could affect management uncertainty.

Because it was uncertain how many vessel owners would stack permits, Amendment 15 used some scenario analyses to determine the impacts of permit stacking (or leasing) separately than the impacts of upgrading/vessel replacement. In other words, the objective of the analyses was to compare two scenarios, Scenarios A and B:

- **Scenario-A:** The landings before stacking/leasing using the current number of vessels and their characteristics.
- **Scenario-B**: The landings after stacking/leasing using the current number of vessels and their characteristics. Using these scenario analyses, the results showed that LPUE and landings would increase after stacking/leasing to the extent determined by the degree and the nature of stacking (maximum stacking, only multi vessel owners stack, etc.).

If it was assumed that all vessels were upgraded in the future, the following two scenarios would still have to be compared to estimate the impacts of stacking/leasing separately from the impacts of upgrading.

- **Scenario-C**: The landings before stacking/leasing using the number of vessels with upgraded HP and lengths characteristics.
- **Scenario-D**: The landings after stacking/leasing using the number of vessels with upgraded HP and lengths characteristics.

There is no question that with vessel upgrades (larger HP and length) and replacements (newer vessels), overall landings and LPUE would increase (from the levels of Scenario A). Thus Scenario C landings and LPUE would be higher than the Scenario A landings and LPUE. In the same way, however, Scenario D landings would be higher than both Scenario B and Scenario D landings. In short, in the absence of fishing power and mortality adjustments permit stacking/leasing would still lead to an increase in landings and LPUE as the permits are stacked (DAS leased) on more productive newer vessels with better crews and captains having more flexibility/opportunity in optimizing landings with doubled-up allocations. The factors that could lead to higher LPUE and landings as a result of permit stacking/leasing are discussed in detail in Section 5.4.4.3 of the Amendment 15 document.

- *Request for a comprehensive assessment of the entire fishing community (housing, education, taxes, unemployment, etc.), in particular New Bedford. In addition, while stacking/leasing does not require a referendum vote, there is precedent.*

Response: Considering timing and resources available, this document does include an assessment of the impacts of this action on fishing communities, including New Bedford. Stacking and leasing would be voluntary, so impacts are more uncertain based on the number of vessels that chose to stack/lease. Therefore, the document included analyses of four different levels of stacking/leasing including one scenario identified by the industry advisors as “realistic” level of consolidation expected. Estimates of job losses and impacts on shoreside businesses were included in this action, Section 5.4.3.9. Lastly, a comprehensive description of potential social impacts of consolidation was included, Section 5.5.2. These analyses cover a relatively sufficient assessment of potential impacts on fishing communities. The specific issue of whether to allow stacking and/or leasing warranted a referendum was never specifically discussed by the full Council, but because the program is voluntary and is not an allocation of fishing quota a referendum does not seem required.

- *Council should clarify that the ownership cap does not limit a 5% owner's ability to lease-out DAS and access area trips.*

Response: This clarification was made to Alternative 3.4.2.3.

- *Suggestion that Section 3.3.3.9 be eliminated because those provisions are discussed in other sections and it is redundant.*

Response: The Committee agreed and this section was deleted in the FEIS.

- *Support for making the fishing power and mortality adjustments frameworkable. Suggestion to add to the list of frameworkable items. And if they are adjusted, DAS assigned to all stacked permits (past and present) be adjusted going forward.*

Response: The Council agreed and added this to the list of frameworkable items. It was not selected since stacking and leasing were not adopted in this action.

- *One commenter argued that the failure of the Council to consult with community leaders on development of Amendment 15 is in violation of the Magnuson Act. In addition, the public has not been adequately informed as to the regulations being proposed and cannot fully understand their impacts. There are too many uncertainties in the document. Lastly, the makeup of the Council, Committee and Advisory panel is biased and favors larger vessel owners and elimination of vessels.*

Response: Section 312(b) of MSA "Fishing Capacity Reduction Program", explains that there is a difference between the Council adopting measures that will address capacity and a "capacity reduction program" that is conducted by the Secretary. Section 312(b) pertains to Capacity Reduction Programs in terms of buyouts and other similar "Programs" as described in that section of the act and conducted by the Secretary, but does not pertain to measures implemented under an FMP that address excess capacity in a fishery. Therefore, the measures considered in this action are not in violation of the act related to what is required in a full capacity reduction program. There have been about 50 public meetings since November 2007 when Amendment 15 has been discussed at some capacity. Meeting summaries and materials are available on the Council website. In addition, meeting notices are mailed to over 400 individuals for all scallop related meetings with the agenda and meeting location. Regional publications like Commercial Fisheries News included notice of many of these meetings as well as detailed articles about what took place at many of the Amendment 15 related meetings. The DEIS and public hearing document summarizes the expected benefits of all the measures considered in this action. The Council is made up of state directors and individuals nominated by each New England state. Governors make recommendations, and NMFS approves them; the Council itself has no say in who is nominated and selected to a Council for a three year term. Committees are made up of Council members, and in New England the Chair of the Council decides who is on each Committee annually based on requests from individual Council members and other factors. Lastly, the advisory panel is made up of individuals that apply. The Scallop Committee makes recommendations to the Executive Committee every three years. For the Scallop AP, the Committee tries to identify about 5 individuals from the general category sector and 15 from the limited access sector. There are also other individuals that apply that do not fall into either. In addition, the Committee tries to identify individuals that are from different areas, gears, etc. The major problem recently is that very few individuals apply to be on the Scallop AP.

- *One commenter voiced general frustration with the process in terms of how an action can be initiated if only a small group of individuals want it; concern that the process was not public enough, that the document was not properly prepared, and that some Council members are biased and will have monetary gain from stacking/leasing.*

Response: The Council was first approached with this issue in a letter of correspondence for the November 2007 Council meeting, when the Council identifies priorities for work for calendar year 2008. Once the Council agrees to initiate an action to consider an issue it does not matter if one or all members of the industry support it. At that time it becomes a Council decision and priority to consider. The Council held about 50 meetings over slightly less than three years. The DEIS was reviewed and approved by NMFS and a Notice of Intent was published for the DEIS in July 2010, suggesting that the DEIS was sufficient and available for public comment. There are no scallop vessel owners currently on the New England Council.

#### 6.2.5.3 PURPOSE 3 – Measures to adjust specific aspects of the FMP to make overall program more effective

- *The cumulative effects section should include a discussion of the potential contributing effects of invasive tunicates, and changes in water quality resulting from increasing acidifications and water temperature.*

Response: Reference to invasive species and changes in water quality from increasing acidifications and water temperature has been added to the Cumulative Effects section (5.8).

#### 6.2.5.4 General comments not related to Amendment 15

- *Request to repeal the small dredge exemption program.*

Response: This was not in the scope of issues in Amendment 15. The Council can raise this in a future action.

- *State of Maryland made five specific requests not related to Amendment 15, but related to ways to increase fishing opportunities for Mid-Atlantic general category fishermen. First, requested that NOAA and the Council develop a program that would make funding available to specific categories of general category fishermen (new entrants, small scale fishermen) to lease permits and quota. Second, it was suggested the NOAA expand their grants program of state-operated permit banks to include Mid-Atlantic sea scallop permits. Third, the Council should allow permit banks to purchase LA scallop permits to be converted to general category quota. Forth, that the Council create an inshore scallop management area exclusively for the general category fishery. And last, create a central lien registry to improve financing vessels.*

Response: None of these issues were in the scope of Amendment 15 alternatives, and some of them are not even issues the Council has the authority to consider. The third and forth items have come up at several meetings but have not been included in an action to date.

- *One commenter raised confusion about why there are 18 voting members on the Council when the Magnuson Act says there should be 17.*

Response: The original Magnuson Act did set voting members at 17 for the New England Council, but that was increased to 18 under Section 210 of H.R. 2670, Department of Commerce, Justice, and State, the Judiciary and Related Agencies Appropriations Act, 2000.

- *Request to revise how the NGOM TAC is established. Argument that it needs to include state water biomass and catch since so much of landings with NGOM permit are from state waters. And if federal NGOM TAC is too low, those vessels will not be able to participate in state water fishery once federal TAC is harvested.*

Response: The scoping document for Amendment 15 included an option to consider alternative ways to calculate the hard TAC. But the only comments that came in during scoping focused on changing current restrictions in that area, and not how to change how the TAC is calculated. When new survey information is available for this area the PDT will calculate the TAC differently, and not simply base it on historical landings from the NGOM area. Ultimately the Council decided to reject this alternative for this action, See Alternative 3.6.7 in the considered and rejected section.

- *The Council and PDT have not addressed the need for the market to have smaller scallops, and this has created a market share for imported scallops because of measure in place - ring size and rotational management.*

Response: A main objective of the Scallop FMP is to optimize yield of the scallop resource and economic benefits to the nation. Area rotation and larger ring sizes, implemented under Amendment 10, optimizes yield by increasing the size of scallops landed. This increases yield per animal, reducing overall fishing mortality and increases the economic benefits to the nation. That is, the FMP is not designed to supply small scallops in the market. In fact quite the opposite is true. The change in the composition of the scallop landings toward larger scallops increased scallop revenues, benefited the harvesters and increased the scallop exports. The percentage of U10 scallops in total landings increased from 6% in 2003 to over 20% in 2006-2008 and to 15% in 2009, and the percentage of 11-20 count scallops increased from 21% to over 50% in 2006-2008 and to over 60% in 2009. the Increase in LPUE and reduction in DAS used also helped to lower the fishing costs for the vessels and increased profits in the scallop fishery. Since implementation of Amendment 10, average annual price of scallops increased from about $4.15 in 2003 to over $6.50 in 2007 and $6.90 in 2008-2009 as the larger scallops were sold at a price premium at both domestic and export markets. Total fleet revenues increased from about $235 million in 2003 to over $399 million in 2009. The increase in landings especially of larger scallops led to a doubling of U.S. exports of scallops from about 13.4 million pounds in 2003 to 25.7 million pounds in 2009. Because of the increase in the value of scallop exports to over $157 million in recent years, the difference in the value of exported and imported scallops, that is scallop trade deficit, declined considerably from $134 million in 2003 to $76 million in 2009. For more information about the economic trends in the scallop fishery please see Section 4.4 of Amendment 15.

- *PDT and Council have not addressed the potential for scallop aquaculture and managing predators to further optimize yield (i.e. starfish).*

Response: These issues were not identified as goals for this action, but could be considered in future actions.

### 6.2.5.5 Response to National Marine Fisheries Service Comments

National Marine Fisheries Service commented on many aspects of Amendment 15. A summary of their comments and how they were addressed is found below.

#### 6.2.5.5.1 PURPOSE 1 – Consider measures that will implement annual catch limits (ACLs) and accountability measures (AMs) to prevent overfishing

- **Annual Catch Limits (ACL)**

  *The ACL discussion could be improved by describing the steps the PDT will take to establish the values associated with the various catch levels in the flowchart.*
  Response*:* The PDT updated the document to describe how allocations will be made using the flowchart and provided an example, see Section 3.2.3.2. Framework 22 is the first action that will follow Amendment 15, and the PDT included a detailed description of how the various catch levels will be set for 2011 and 2012.

- **Monitoring ACLs and AMs**

  *The Council needs to clarify the relationship between the overall yellowtail ACL for the scallop fishery and the access area allocation of 10 percent of the overall yellowtail ACL.*
  Response*:* A sentence was added to make this clarification in the document, see Section 3.2.3.11.2. In summary, the current bycatch cap in access areas, equivalent to 10% of the total YT ACL, will remain in effect – Amendment 15 does not change that provision. The yellowtail sub-ACL is the total cap, and the access area yellowtail TAC is part of that.

  In years when the total YT sub-ACL is more than 10% of the total YT ACL, the access area TAC is not limited. But in years when the YT sub-ACL is less than 10% of the total, the access area TAC could be limited. The Council has recently identified a priority for 2011 within Multispecies FW46, that will consider removing or adjusting the 10% bycatch cap in access areas, but the Council has not started work on that action yet.

  *Information on the yellowtail stock area fished is important to effectively monitor the yellowtail ACL, in particular if the Council adopts in-season yellowtail AMs. The simplest way to do this is to require vessels to report the yellowtail stock area fished for each trip through an expanded VMS activity code. This would also facilitate year-end monitoring of yellowtail catch for the reactive yellowtail AMs proposed in Amendment 15.*
  Response: The Council updated the yellowtail measures to include this monitoring recommendation, see Section 0.

  *The Council should clarify whether or not vessels would be allowed to fish in multiple yellowtail stock areas on a single trip. If this is the case, vessels would need to submit multiple VMS catch reports at the end of the trip, similar to those recently implemented in the multispecies fishery, to specify their catch by yellowtail stock area. In addition, VMS catch report requirements applicable to yellowtail bycatch estimation in the scallop*

*fishery should be revised to include entry of the total pounds of all species kept to compare to yellowtail caught, rather than only scallops kept.*
Response: These clarifications were included in the alternative when the Council took final action and Section 0 has been updated with these details.

#### 6.2.5.5.2 PURPOSE 2 - Address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource while considering impacts on various fisheries and fishing communities

- **Scallop Days-at-sea (DAS) Stacking and Leasing**

  *NMFS suggested that the Council needs to clarify details of the stacking and de-stacking provisions to ensure effective implementation and made a host of recommendations.*
  Response*:* The leasing and stacking alternatives in Amendment 15 were not chosen by the Council and therefore these clarifications were not needed for the FEIS. The Scallop Committee did work on most of them and had recommendations for clarifications, but since these measures were not selected as part of the proposed action the full Council did not address them.

  *With regard to scallop days-at-sea (DAS) leasing the Council should adopt measures consistent with the NE multispecies DAS leasing program, where the catch history would be allotted to the vessel landing the catch (i.e., the lessee), rather than the vessel that leased out the DAS (i.e., the lessor), and the DAS usage history would be applied to the lessor.*
  Response*:* The Council did not select leasing and so measures regarding catch history were not needed. The Scallop Committee did discuss this issue in detail before final action by the Council and actually suggested an alternative method supported by the Scallop Advisory Panel that would give landings history to the lessor. Since all permits are active in this fishery a permit owner should retain both the catch and DAS history so their permit is not devalued. Doing otherwise will just impede leasing.

#### 6.2.5.5.3 PURPOSE 3 – Measures to adjust specific aspects of the FMP to make overall program more effective

- **Individual Fishing Quota (IFQ) Carryover**

  *The carryover provision is in place for other fisheries to allow a small amount of effort to be carried into the subsequent fishing year to address unforeseen events that prevent full utilization of a vessel's allocations. A 15-percent IFQ carryover allowance may be more than is necessary to account for unforeseen events in the IFQ fishery.*
  Response*:* IFQ carryover is an essential part of most IFQ programs, and it is seen to be a safety mechanism for IFQ owners in the case of bad weather/unforeseen circumstances at the end of the fishing year that prevent them from using all their quota. Fifteen percent is a reasonable amount modeled after other IFQ programs (Sanchirico, et al, 2005) and can be changed if it increases management uncertainty for this portion of the fleet. Most of the IFQ allocations are rather small to begin with, so 15% does not equate to a large amount of landings that could be shifted to the next year. The Council heard testimony from the public that 15% was a reasonable amount and was needed to provide flexibility for the industry. If this amount proves to be excessive and leads to increased management uncertainty, the amount can be adjusted downward by framework action.

*The Council needs to consider the impacts of various carryover levels on ACLs. The Council will also need to address the IFQ cap per vessel (2 percent, currently) since it is possible that a vessel already at the 2-percent cap could carry IFQ over, causing it to exceed the 2-percent cap.*
Response: The Council also increased the amount of IFQ allowed under the cap to 2.5% to be more consistent with the other ownership cap per individual of 5%. If a vessel or individual is at either ownership cap and it carries quota to the next fishing year, causing it to exceed either cap, that was not considered to be in violation of the caps because that vessel or individual caught less the preceding year. By approving the carryover provision, a vessel or individual would not be in violation of the cap through carryover, but the Council did limit any carryover to one year, to prevent excessive carryover and uncertainty in annual catch. The carryover would not be considered extra allocation in the subsequent year that would count toward the vessel's cap.

*The Council will need to clarify how the provision would apply to leased IFQ—I recommend that the Council should be consistent with the provision in the NE multispecies leasing program, under which DAS are carried over by the recipient vessel (lessee).*
Response: The document was updated to clarify that if a vessel has unused leased and original quota at the end of the fishing year, it may carry over 15% of its total unused quota (including any unused leased and original quota) to the subsequent fishing year.

- **IFQ Leases and Transfers**
  *There is concern that allowing leasing and transfers between the two IFQ fleet components may alter the character of the IFQ fishery and provide administrative challenges.*
  Response: The Council agreed and specified that LAGC quota can be split from a permit for LAGC IFQ vessels only, not for LA vessels with LAGC permits, See Alternative 3.4.2.4.1.

- **Community Fishing Associations (CFA)**
  *The alternative that would authorize the establishment of CFAs is not fully developed, and the need for the measure is not clear. NMFS identified a host of issues that would need to be clarified before this program could be approved.*
  Response: The Council agreed that this alternative was not ready for implementation and decided that it should not be chosen at final action. It may be brought forward again in future priority discussions.

- **RSA Program Improvements**
  *The Council should modify Alternative 3.4.4.11. This alternative would exempt all research projects from the regulations that currently require issuance of an Exempted Fishing Permit (EFP) to confer exemptions from the sea scallop crew size restrictions; the Elephant Trunk Access Area (ETAA), and presumably Delmarva (DMV), seasonal closure; and the restriction on fishing in only one access area during research activity.*

<u>Response</u>*:* The Council modified this alternative to state that only RSA projects would be exempt from crew restrictions, the seasonal closures in Mid-Atlantic access areas, and the requirement to return to port if fishing in more than one area, not all research projects. In addition, alternative 3.4.4.11 has been clarified that the exemptions would only be for RSA projects. The Council never discussed extending these exemptions for EFPs.

*More explanation is needed in the discussion of the alternatives for RSA rollover.*
<u>Response</u>*:* The alternative was modified to clarify what unused RSA means and to state that a grace period of one quarter of the following fishing year will be implemented as an extension for harvesting compensation TAC that has already been awarded, see Alternative 3.4.4.8.5. Section 3.4.4.8 Rollover of RSA has been clarified to clearly define 'unused RSA.'

- **Change of the Fishing Year**
  *It has become increasingly common for annual scallop specifications to be implemented after the start of the fishing year on March 1st. The Council should recognize that, in order to use the data from the most recent summer survey, it is necessary to adjust the start of the fishing year to later in the calendar year.*
  <u>Response</u>*:* The Council addressed this comment by adding an alternative during final action which puts a third year of specifications into each framework adjustment, see Alternative 3.4.5.3. This third year will be superseded by the next framework, but will provide 'default measures' for any period for which the implementation of measures is delayed. This will allow the most recent data to still be used while preventing unnecessary and biologically or economically unfeasible rollover measures.

- **Overfishing Definition (OFD)**
  *The Council is urged to adopt the "hybrid" OFD in Amendment 15. This OFD will be much more consistent with the Council's area rotation program than the current OFD. I recommend updating the OFD Alternatives in Amendment 15 to incorporate the new reference points that have been established through SARC 50. Reference to $F_{MAX}$ and $B_{MAX}$ should be changed to $F_{MSY}$ and $B_{MSY}$, respectively. In order to ensure opportunity for public comment on these adjustments, the agenda for the next Scallop Committee meeting should announce that this change will be considered by the Committee, and the public may comment at that time. Alternatively, if Amendment 15 is delayed, Framework 22 could incorporate the reference point updates into the FMP.*
  <u>Response</u>*:* The Council selected the hybrid overfishing definition and changing the reference points to $F_{MSY}$ and $B_{MSY.}$ The latter was presented at the final Committee meeting before final action by the Council and a separate alternative, Alternative 3.4.1.4, was added to Amendment 15 to update the current overfishing reference points, as developed in SARC 50.

## 6.3 MARINE MAMMAL PROTECTION ACT (MMPA)

Section 4.3 of this action contains a description of marine mammals potentially affected by the Scallop Fishery and Section 5.3 provides a summary of the impacts of the proposed action as analyzed in Amendment 15. A final determination of consistency with the MMPA will be made by the agency in its decision to approve or partially approve Amendment 15.

## 6.4 ENDANGERED SPECIES ACT (ESA)

Section 4.3 of this action contains a description of marine mammals potentially affected by the Scallop Fishery and Section 5.3 provides a summary of the impacts of the proposed action as analyzed in Amendment 15. A final determination of consistency with the ESA will be made by the agency in its decision to approve or partially approve Amendment 15.

## 6.5 ADMINISTRATIVE PROCEDURE ACT (APA)

Sections 551-553 of the Administrative Procedure Act established procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process, and to give public notice and opportunity for comment. The Council did not request relief from notice and comment rule making for this action, and the Council expects that NOAA Fisheries will publish proposed and final rule making for this action.

The Council has held over 40 meetings open to the public on Amendment 15 (Section 7.0). The Council initiated this action at the November 2007 Council meeting and approved final measures at the September 2010 meeting. After submission to NMFS, a proposed rule and notice of availability for Amendment 15 under the MSA and NEPA will be published to provide opportunity for public comment.

## 6.6 PAPERWORK REDUCTION ACT (PRA)

The purpose of the Paperwork Reduction Act is to minimize paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. It also ensures that the Government is not overly burdening the public with requests for information. Amendment 15 includes a revision to the current PRA collection requirements which includes the new VMS reporting requirements for vessels to report yellowtail flounder on all trips (expanded from requiring the reports only on access area trips).

## 6.7 COASTAL ZONE MANAGEMENT ACT (CZMA)

Section 307 of the Coastal Zone Management Act (CZMA) is known as the federal consistency provision. Federal Consistency review requires that “federal actions, occurring inside or outside of a state's coastal zone, that have a reasonable potential to affect the coastal resources or uses of that state's coastal zone, to be consistent with that state's enforceable coastal policies, to the maximum extent practicable.” The Council has determined that this action is consistent with the coastal zone management plan and policies of the coastal states in this region. NMFS will formally request consistency reviews by CZM state agencies following Council submission of Amendment 15.

## 6.8 DATA QUALITY ACT

***Utility of Information Product***

The proposed document includes: A description of the management issues, a description of the alternatives considered, and the reasons for selecting the preferred management measures, to the extent that this has been done. These actions propose modifications to the existing FMP. These proposed modifications implement the FMP's conservation and management goals consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as well as all other existing applicable laws.

This proposed amendment is being developed as part of a multi-stage process that involves review of the document by affected members of the public. The public has had the opportunity to review and comment on management measures during several meetings.

The Federal Register notice that announces the proposed rule and the implementing regulations will be made available in printed publication and on the website for the Northeast Regional Office. The notice provides metric conversions for all measurements.

***Integrity of Information Product***

The information product meets the standards for integrity under the following types of documents:

Other/Discussion (e.g., Confidentiality of Statistics of the Magnuson-Stevens Fishery Conservation and Management Act; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act.)

***Objectivity of Information Product***

The category of information product that applies for this product is “Natural Resource Plans.”

In preparing specifications documents, the Council must comply with the requirements of the Magnuson-Stevens Act, the National Environmental Policy Act, the Regulatory Flexibility Act, the Administrative Procedure Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Data Quality Act, and Executive Orders 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas).

This amendment is being developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMP's conservation and management measures shall be based upon the best scientific information available. Despite current data limitations, the conservation and management measures proposed to be implemented under this framework are based upon the best scientific information available. This information includes complete NMFS dealer weighout data through 2008, and includes incomplete dealer weighout data for 2009. Dealer data is used to characterize the economic impacts of the management proposals. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the scallop fishery.

The policy choices (i.e., management measures) proposed to be implemented by this document are supported by the available information. The management measures contained in the amendment document are designed to meet the conservation goals and objectives of the FMP.

The supporting materials and analyses used to develop the measures in the amendment are contained in the document and to some degree in previous amendments and/or FMPs as specified in this document.

The review process for this amendment involves the New England Fishery Management Council, the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries headquarters. The document was prepared by staff of the Council and Center with expertise in scallop resource issues, habitat issues, economics, and social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the specifications document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

## 6.9 E.O. 12866 AND REGULATORY FLEXIBILITY ACT

### 6.9.1 Introduction

The Regulatory Impact Review (RIR) provides an assessment of the costs and benefits of proposed actions and other alternatives in accordance with the guidelines established by Executive Order 12866. The regulatory philosophy of Executive Order 12866 stresses that in deciding whether and how to regulate, agencies should assess all costs and benefits of all regulatory alternatives and choose those approaches that maximize the net benefits to the society.

The RIR also serves as a basis for determining whether any proposed regulations are a "significant regulatory action" under the criteria provided in Executive Order 12866 and whether the proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the Regulatory Flexibility Act of 2180 (RFA).

This RIR summarizes the effects of the proposed observer program and other alternatives considered in this Amendment 15. The Amendment 15 document contains all the elements of the RIR/RFA, and the relevant sections are identified by reference to the document.

The purpose of and the need for action are described in Section 1.2. The description of the each selected alternative including the no action alternative is provided in Section 3.0.

### 6.9.2 Economic Impacts

Section 5.4 evaluated economic impacts of Amendment 15 proposed measures and alternatives considered by the Council. Sources of uncertainty are identified in Section 5.4.4.7. The individual measures considered by Amendment 15 are discussed in Sections 5.4.1 through 5.4.5 and in the relevant subsections shown below:

- Economic impacts of no action: Section 5.4.1
    - Compliance with re-authorized Magnuson-Stevens conservation and management ACT: Section 5.4.2
    - ACL structure and subcomponents: Section 5.4.2.1
    - Management uncertainty and Accountability Measures (AM): Section 5.4.2.2
    - Scallop ACL for other fisheries: Section 5.4.2.3
    - ACLs and Accountability Measures (AMs) for Yellowtail Flounder: Section 5.4.2.4
    - Timing of ACL monitoring and triggering AMs: Section 5.4.2.5
- Measures to address excess capacity in the limited access scallop fishery and provide more flexibility for efficient utilization of the resource: Section 5.4.3
- Measures to adjust specific aspects of FMP to make overall program more effective: Section 5.4.4
    - Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation: Section 5.4.4.1
    - Allow LAGC IFQ rollover up to 15%: Section 5.4.4.2.2
    - Modify the general category possession limit: Section 5.4.4.2.3
    - Modify the maximum quota one general category vessel can fish: Section 5.4.4.2.4
    - Allow LAGC quota to be transferred from IFQ permits: Section 5.4.4.2.5
    - Measures to address EFH closed areas if Phase II of the EFH Omnibus Amendment is delayed: Section 5.4.4.3
    - Measures to improve research set-aside program: Section 5.4.4.4
    - Measures to change the scallop fishing year: Section 5.4.4.5.1
    - Addition of a third year of specifications to the framework process: Section 5.4.4.5.2
    - Addition to the list of frameworkable items in the FMP: Section 5.4.4.6
- Uncertainties and risks: Section 5.4.5

### 6.9.3 Summary of Regulatory Impacts

The economic impacts of the proposed regulations on scallop fishery, on consumers and total economic benefits to the nation are analyzed in Section 5.4 and the economic impacts of the individual measures are discussed in subsections of 5.4 as indicated above.
The economic impacts of the proposed measures and other alternatives including the alternatives for complying with the Magnuson Stevens Act, i.e., annual catch limits (ACLs) and accountability measures (AMs), no action for permit stacking/leasing measures, measures to modify general category possession limit and maximum quota, overfishing definition and EFH areas are analyzed in Section 5.4.3.3 relative to no action and using a cost-benefit framework.

The aggregate economic impacts of the combined measures proposed in this Amendment are uncertain in the short-term and could range from a potentially small negative to potentially small positive impacts on the net national benefits. In the long-term, however, the economic impacts of the combined measures on the producer and consumer surpluses and net national economic benefits are expected to be positive.

The proposed alternative for compliance with new annual catch limit (ACL) requirements, the proposed methods that would divide annual catch between the limited access and general category fisheries with separate buffers for management uncertainty and accountability measures are not likely to have considerable impacts on the scallop revenues, consumer and producer surpluses and economic net benefits in the short- and the long-term. This is because the new system is expected to result in a similar landings stream compared to the status quo management. Even if the landing streams changed as a result of the new measures, the proposed measures will minimize the risk to the resource from overfishing because these sources of uncertainty are better accounted for through AMs. Minimizing risk to the resource is expected to keep the landings and economic benefits relatively more stable and reduce the uncertainty in business decisions with positive impacts on the scallop fishery.

The no action" alternative regarding permit stacking/leasing will have no impact on the scallop revenues and total economic benefits because no additional measures would be implemented to address excess capacity in the limited access scallop fishery. The alternative options that allowed stacking/leasing would provide increased flexibility for vessels to adjust their effort to changes in scallop biomass, management measures, fishing costs, and market conditions, resulting in a smaller fleet size, improved technical efficiency, lower fishing costs, higher profits and greater economic benefits from the scallop fishery. These alternatives could potentially have some adverse distributional impacts, however, on the vessels that are not involved in permit stacking/leasing if fishing mortality increased as result of open area DAS transfers. Permit stacking could also result in loss of jobs both in the scallop harvesting sector and related waterfront businesses depending on the degree of consolidation of the scallop fleet. Because the proposed action is a continuation of the same regulations (no stacking/leasing for the limited access fishery), it will not have such adverse impacts on the jobs in the scallop harvesting sector and related industries.

On the other hand, the adoption of "hybrid" overfishing definition could reduce net revenues (or producer surplus) by about 5.8% and total economic benefits including the consumer surplus by 6.9% compared to no action alternative in the first 10 years of the program (Table 49, Section 5.4.4.1). This alternative is expected to have positive economic impacts over the long-term, however, since this definition will provide more flexibility to meet the area rotation objectives and is expected to increase catch by 10% with larger average scallop size. In addition, this alternative could potentially result in less area swept and could reduce adverse effects on bycatch, seabed habitats and EFH with positive indirect impacts on the scallop fishery, offsetting in part or in full short-term negative effects of the hybrid overfishing definition on revenues and net economic benefits.

The proposed action would also modify the EFH areas closed to scallop gear under Scallop Amendment 10 to be consistent with Multispecies Amendment 13 and eliminate the areas closed for EFH under Amendment 10. As a result, effort could be allocated to Closed Area 1 where the scallops are larger instead of allocating more open area effort in areas with lower catch rates. This in turn could have positive effects on the scallop resource and future yield. According to the estimates, the future yield could increase by 1.2 million pound a year, resulting in about $8 million (assuming a price of $7 per pound) more revenues from the scallop fishery per year. Over a period of 20 years, this would increase the cumulative present value of scallop fleet revenue by over $127 million at a 3% discount rate and by over $97 million at a 7% discount rate. Fishing in more productive areas would also reduce the fishing costs. Therefore this alternative is expected to increase revenues, profits and producer and consumer surpluses from scallop fishery with overall positive impacts on net economic benefits.

The proposed adjustments related to the general category fishery including an increase in the possession limit from 400 pounds to 600 pounds, an increase in the maximum quota a vessel can harvest from 2 percent to 2.5 percent of the total limited access general category quota and a provision to allow a limited access general category vessel to permanently transfer their quota but retain their permit is expected to provide flexibility, to reduce fishing costs and increase profits for these vessels (Section 5.4.4.2). The measures to improve the current research set-aside program, the addition on of a third year of specifications to the framework process and the addition of new items to the list of frameworkable measures in the FMP are expected to have positive economic benefits on the scallop fishery both in the short-term and over the long-run.

In summary, although some specific measures proposed in this Amendment, such as the hybrid overfishing definition, catch limits and AMs could have some negative impacts on the revenues and profits from the scallop fishery in the short-term, the benefits from the other proposed alternatives including the measures that would reduce scientific or management uncertainty, the modification of the EFH areas, modifications to the LAGC possession limits and other related measures are expected to offset in part or in full these short-term negative effects. In the long-term, the economic impacts of the combined measures on the participants of the scallop are expected to be positive. The aggregate impacts of the proposed measures could differ, however, from the economic impacts of the individual measures as discussed in the relevant subsections of Section 5.4 and summarized in the following section.

### 6.9.4 Enforcement Costs

The enforcement costs and benefits of the proposed options for Amendment 15 are within the range of impacts addressed in Section 8.9 of Amendment 10 FSEIS and Section 5.4.22 and Section 5.6.3 of Amendment 11. The qualitative analysis included a discussion of the pros and cons of the proposed alternatives from an enforcement perspective. The proposed measures by Amendment 15 are very similar to the existing measures in terms of the enforcement requirements, since they include the continuation of the area specific trip allocations, area closures, open area DAS allocations, measures for reducing bycatch, and the continuation of observer coverage program. The costs of implementing and enforcing the proposed action are not expected to compromise the effectiveness of implementation and enforcement of this action. Furthermore, there are several mechanisms and systems, such as VMS monitoring and data processing, already in place that will aid in monitoring and enforcement of this action. Therefore, the overall enforcement costs are not expected to change significantly from the levels necessary to enforce measures under the no action regulations.

### 6.9.5 Determination of Significant Regulatory Action

Executive order 12866 defines a "significant regulatory action" as one that is likely to result in: a) an annual effect on the economy of $100 million or more, or one which adversely affects 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; b) a serious inconsistency or interference with an action taken or planned by another agency; c) a budgetary impact on entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients thereof; d) novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this executive order.

The preceding analysis shows that Amendment 15 would not constitute a "significant regulatory action" since it will not raise novel legal and policy issues, other than those that were already addressed and analyzed in Amendment 10 and Amendment 11. The short-term economic impacts of the proposed measures are uncertain and could range from a potentially small negative to potentially small positive impacts. It is not possible to quantify the benefits of all the combined measures. Given that the hybrid overfishing definition could lead to a decline in annual average revenues in the first 10 years by about $34 million, and the modification of the EFH areas could *increase* annual revenues by $8 million or more, the net reduction in revenues is not expected to exceed $26 million ($34 million-$8million) if other measures included in the Amendment do not have any positive impacts in the short-term. In fact, as summarized above, majority of the measures included in this Amendment are expected to increase overall economic benefits by increasing scallop yield and revenues and by reducing fishing costs. This increase is either expected to offset some part of the decline in short-term revenues or to exceed that decline due to the management with hybrid OFD. Overall impacts on net benefits are expected to be positive for the long-term period, however. Therefore, the proposed regulations may not have an annual impact on the economy of $100 million or more. The proposed alternatives will not adversely affect in a material way the economy, productivity, competition, public health or safety, jobs or state, local, or tribal governments or communities in the long run. The proposed action also does not interfere with an action planned by another agency, since no other agency regulates the level of scallop harvest. It does not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs, or the rights and obligations of recipients.

## 6.10 INITIAL REGULATORY FLEXIBILITY ANALYSIS

The purpose of the Regulatory Flexibility Analysis (RFA) is to reduce the impacts of burdensome regulations and record-keeping requirements on small businesses. To achieve this goal, the RFA requires government agencies to describe and analyze the effects of regulations and possible alternatives on small business entities. Based on this information, the Regulatory Flexibility Analysis determines whether the proposed action would have a "significant economic impact on a substantial number of small entities."

### 6.10.1 Problem Statement and Objectives

The purpose of the action and need for management is described in Section 1.2 and goal and objectives in Section 2.0 of the Amendment 15 document.

### 6.10.2 Management Alternatives and Rationale

The proposed action is described in several sections in Section 3.0 and no action alternative is described in Section 3.1 of the framework document.

### 6.10.3 Determination of Significant Economic Impact on a Substantial Number of Small Entities

#### 6.10.3.1 Description of the small business entities

The proposed regulations of Amendment 15 would affect vessels with limited access scallop and general category permits. Section 4.4 (Fishery-related businesses and communities) of Amendment 11 document and Section 4.4 of Amendment 15 (Economic and Social Trends) provide extensive information on the number, the port, the state, and the size of vessels and small businesses that will be affected by the proposed regulations. The current information on the number of scallop permits for the years 1999 to 2010 are provided in Table 147 and the unique number of permits by right-id is provided in Table 148. According to the recent permit data, there were 313 vessels that obtained full-time limited access permits in 2010, including 250 dredge, 52 small-dredge and 11 scallop trawl permits. In the same year, there were also 34 part-time limited access permits in the sea scallop fishery. The number of active general category vessels has fluctuated in recent years with over 400 vessels with IFQ permits and over 130 vessels with NGOM permits and over 330 vessels with incidental catch permits (up to 40 lb. of scallops per trip) in 2009 as described in Table 150. Therefore, the proposed alternatives of Amendment 15 are expected to have impacts on a substantial number of small entities.

The RFA recognizes three kinds of small entities: small businesses, small organizations, and small governmental jurisdictions. It defines a small business in any fish-harvesting or hatchery business as a firm that is independently owned and operated and not dominant in its field of operation, with receipts of up to $4 million annually. The vessels in the Atlantic sea scallop fishery could be considered small business entities because all of them grossed less than $3 million according to the dealer's data for 1994 to 2009 fishing years (Table 151). According to this information, annual total revenue averaged over a million per limited access full-time vessel since 2004. According to the 2009 Dealer data total revenues per vessel were equivalent to 1,031,036 per full-time vessel. Average scallop revenue per general category vessel was $79,915 in 2009 fishing year. Both full-time and part-time limited access vessels had a high dependence on scallops as a source of their income and the majority of the full-time (96%) and the part-time vessels (71%) derived more than 90% of their revenue from the scallop fishery during 2008-2009 (Table 152). Although the current data on the limited access general category fishery is less than perfect, the available information shows again that the majority (more than 70%) of the limited access general category IFQ and the general category NGOM permit holders derived more than 90% of their revenues from the scallop fishery (Table 153). Therefore, scallop fishing is an important source of income for the majority of vessels in the scallop fishery. The increase in scallop prices resulted in higher revenues for all participants and increased the share of scallops in their total income. For the limited access general category vessels the percentage of the total revenue from scallops will likely to decline in 2010 because these vessels were allocated about 10% of the total TAC in 2008-2009 but were allocated 5.5% of the total TAC starting with 2010 according to the provisions of Amendment 11. Section 5.7 (Impact on other Fisheries) and subsection 5.7.3.1 of Amendment 15 provide detailed information on the composition of revenue and revenues from other species for the LA vessels. Section 4.4.6 of Amendment 15 provides information on the composition of revenues for the limited access general category vessels and discusses some of the data limitations.

**Table 147. Scallop Permits by category by application year**

| Permit category | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Full-time | 213 | 220 | 224 | 234 | 238 | 242 | 248 | 255 | 256 | 254 | 259 | 252 |
| Full-time small dredge | 1 | 3 | 13 | 25 | 39 | 48 | 57 | 59 | 63 | 56 | 55 | 54 |
| Full-time net boat | 16 | 17 | 16 | 16 | 16 | 15 | 19 | 14 | 12 | 11 | 12 | 11 |
| **Total full-time** | 230 | 240 | 253 | 275 | 293 | 305 | 324 | 328 | 331 | 321 | 326 | 317 |
| Part-time | 12 | 16 | 14 | 14 | 10 | 4 | 3 | 3 | 2 | 2 | 3 | 3 |
| Part-time small dredge | 3 | 4 | 6 | 8 | 19 | 26 | 30 | 34 | 35 | 32 | 34 | 35 |
| Part-time trawl | 22 | 20 | 18 | 10 | 8 | 3 | - | - | - | - | - | - |
| **Total part-time** | 37 | 40 | 38 | 32 | 37 | 33 | 33 | 37 | 37 | 34 | 37 | 38 |
| Occasional | 4 | 4 | 5 | 4 | 3 | 3 | 1 | 2 | 1 | 1 | - | - |
| Occasional trawl | 20 | 16 | 19 | 15 | 8 | 5 | 5 | - | - | - | - | - |
| **Total occasional** | 24 | 20 | 24 | 19 | 11 | 8 | 6 | 2 | 1 | 1 | 1 | 1 |
| **Total Limited access** | 291 | 300 | 315 | 326 | 342 | 346 | 363 | 367 | 369 | 356 | 362 | 354 |

Note: The permit numbers above include duplicate entries because replacement vessels receive new permit numbers and when a vessel is sold, the new owner would get a new permit number.

**Table 148. Scallop Permits by unique right-id and category by application year**

| Permit category | 2008 | 2009 | 2010 |
|---|---|---|---|
| Full-time | 250 | 250 | 250 |
| Full-time small dredge | 52 | 52 | 52 |
| Full-time net boat | 11 | 11 | 11 |
| **Total full-time** | **313** | **313** | **313** |
| Part-time | 2 | 2 | 2 |
| Part-time small dredge | 31 | 32 | 32 |
| Part-time trawl | 0 | 0 | 0 |
| **Total part-time** | **33** | **34** | **34** |
| Occasional | 1 | 0 | 0 |
| **Total Limited access** | 347 | 347 | 347 |

**Table 149. General category permit before and after Amendment 11 implementation**

| AP_YEAR | Scallop landings (Million lb.) | Number of active General category vessels | General category permit (up to 2008) | Number of permits qualify under Amendment 11 program | | | Grand Total |
|---|---|---|---|---|---|---|---|
| | | | | Limited access general category IFQ permit (A) | Limited access NGOM permit (B) | Incidental catch permit (C) | |
| 2000 | 0.37 | 212 | 2263 | | | | 2263 |
| 2001 | 1.58 | 290 | 2378 | | | | 2378 |
| 2002 | 1.11 | 315 | 2512 | | | | 2512 |
| 2003 | 1.95 | 348 | 2574 | | | | 2574 |
| 2004 | 3.16 | 433 | 2827 | | | | 2827 |
| 2005 | 7.40 | 611 | 2950 | | | | 2950 |
| 2006 | 6.90 | 661 | 2712 | | | | 2712 |
| 2007 | 4.96 | 495 | 2493 | | | | 2493 |
| 2008 | 4.55 | 428 | | 342 | 99 | 277 | 718 |
| 2009 | 4.69 | | | 404 | 136 | 331 | 871 |
| 2010* | | | | 316 | 120 | 294 | 730 |

* Preliminary

**Table 150. General category landings and revenue by fish year (Dealer data, nominal values)**

| Data | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|
| Number of vessels | 432 | 619 | 661 | 495 | 367 | 337 |
| Scallop pounds per vessel | 6,553 | 11,493 | 10,439 | 10,026 | 9,912 | 12,802 |
| Average scallop revenue per vessel | 34,043 | 88,071 | 69,181 | 65,190 | 67,546 | 79,915 |
| Total scallop landings | 2,831,030 | 7,113,906 | 6,900,329 | 4,963,101 | 3,637,852 | 4,314,107 |
| Total scallop revenue | 14,706,711 | 54,515,676 | 45,728,570 | 32,268,982 | 24,789,339 | 26,931,494 |
| Ex-vessel price ($) | 5.6 | 7.7 | 6.7 | 6.5 | 6.8 | 6.3 |

**Table 151. Annual scallops landings and revenues per full-time limited access vessel (all FT vessels, in 2008 prices, including TAC set-aside funds used by individual vessels)**

| FISHYEAR | Average landings by vessel | Average of scallop revenue per vessel | Average Ex-vessel price | Number of FT vessels |
|---|---|---|---|---|
| 1994 | 71,362 | 498,666 | 6.99 | 210 |
| 1995 | 74,402 | 528,152 | 7.10 | 212 |
| 1996 | 76,672 | 592,591 | 7.73 | 209 |
| 1997 | 61,504 | 536,356 | 8.72 | 200 |
| 1998 | 53,041 | 425,029 | 8.01 | 205 |
| 1999 | 96,662 | 685,469 | 7.09 | 216 |
| 2000 | 139,496 | 854,240 | 6.12 | 229 |
| 2001 | 175,345 | 778,513 | 4.44 | 245 |
| 2002 | 183,792 | 853,554 | 4.64 | 262 |
| 2003 | 188,637 | 903,557 | 4.79 | 279 |
| 2004 | 198,101 | 1,153,173 | 5.82 | 295 |
| 2005 | 145,268 | 1,243,382 | 8.56 | 312 |
| 2006 | 152,778 | 1,050,665 | 6.88 | 314 |
| 2007 | 157,191 | 1,064,050 | 6.77 | 315 |
| 2008 | 145,508 | 1,005,503 | 6.94 | 316 |
| 2009 | 160,475 | 1,031,036 | 6.45 | 316 |

**Table 152. Dependence on scallop revenue by limited access vessels and fishyear**

| Permit category | Scallop revenue as a % of total | 2008 | | 2009 | |
|---|---|---|---|---|---|
| | | Number of vessels | % of total vessels | 2009 | Number of vessels |
| Full-time | <75% | 7 | 2% | 6 | 2% |
| | 75%-89% | 7 | 2% | 17 | 5% |
| | >=90% | 315 | 96% | 310 | 93% |
| | Total | 329 | 100% | 333 | 100% |
| Part-time | <75% | 7 | 17% | 13 | 32% |
| | 75%-89% | 5 | 12% | 3 | 7% |
| | >=90% | 29 | 71% | 25 | 61% |
| | Total | 41 | 100% | 41 | 100% |

Source: Dealer database

**Table 153. Dependence on scallop revenue by general limited access vessels and fishyear**

| Permit category | Scallop revenue as a % of total | 2008 | | 2009 | |
|---|---|---|---|---|---|
| | | Number of vessels | % of total vessels | 2009 | Number of vessels |
| Limited Access General Category (IFQ) | <10% | 33 | 14% | 21 | 9% |
| | 10%-49% | 11 | 5% | 9 | 4% |
| | 50%-74% | 5 | 2% | 5 | 2% |
| | 75%-89% | 16 | 7% | 12 | 5% |
| | >=90% | 176 | 73% | 194 | 80% |
| | Total | 241 | 100% | 242 | 100% |
| Limited Access General Category (NGOM) | <10% | 34 | 13% | 24 | 9% |
| | 10%-49% | 9 | 3% | 4 | 2% |
| | 50%-74% | 6 | 2% | 5 | 2% |
| | 75%-89% | 17 | 6% | 13 | 5% |
| | >=90% | 196 | 74% | 211 | 80% |
| | Total | 265 | 100% | 263 | 100% |

Source: Dealer database

#### 6.10.3.2 Determination of significant effects

The Office of Advocacy at the SBA suggests two criteria to consider in determining the significance of regulatory impacts, namely, disproportional and profitability.

The disproportionality criterion compares the effects of the regulatory action on small versus large entities (using the SBA-approved size definition of "small entity"), not the difference between segments of small entities. Amendment 15 is not expected to have significant regulatory impacts on the basis of the disproportionality criterion for the following reasons:

1. All permit holders in the sea scallop fishery are considered small business entities.

2. The proposed measures will affect all the vessels participating in the sea scallop fishery. Although these measures could affect some vessels within the scallop fleet differently than others as discussed below, these differential impacts are not relevant for the disproportionality criterion. The changes in profits, costs, and net revenues due to Amendment 15 are not expected to be disproportional for small versus large entities since all entities, that is, all vessels participating in the scallop fishery are considered small.

3. The proposed action is not expected to place a substantial number of small entities at a significant competitive disadvantage relative to large entities.

The profitability criterion will apply if the regulation significantly reduces profit for a substantial number of small entities compared to no action scenario. The proposed action is not expected to have considerable impacts on the small businesses in the short-term and will have positive impacts on the revenues and profits of the majority of small business entities in scallop fishing industry over the long-term compared to the no action alternative. The following section provides a summary of the economic impacts from the proposed action, alternatives and the mitigating factors. The relevant sections of Amendment 15, which discusses the rationale and impacts of these measures, are also identified.

#### 6.10.3.3 Summary of the economic impacts of the proposed measures and alternatives

The economic impacts under E.O. 12866 need not be identified at the vessel or firm level in the RIR, whereas, these levels remains the focus of the RFAA. The primary goal of RFAA analysis is to consider, however, the effect of regulations on small businesses and other small entities, recognizing that regulations frequently do not provide for short-term cash reserves to finance operations through several months or years until the positive effects of the regulation start paying off.

The economic impacts of the proposed measures and other alternatives including the alternatives for complying with the Magnuson Stevens Act, i.e., annual catch limits (ACLs) and accountability measures (AMs), no action for permit stacking/leasing measures, measures to modify general category possession limit and maximum quota, overfishing definition and EFH areas are analyzed in Section 5.4.3.3 relative to no action and using a cost-benefit framework. The potential economic impacts of these measures on the small business entities and on an average scallop vessel are expected to be mostly proportional to the aggregate (fleet-wide) economic impacts *compared to no action.* This is because each FT vessel receives the same DAS and access area trip allocations, and each PT vessel receives an allocation equal to 40% of the FT vessel allocations, while LAGC vessels receive 5.5% of the projected catch after the TAC set-aside is removed. Therefore, those measures that affect overall projected landings will have proportional impacts on all the participants in the sense that allocations for all vessels will be adjusted up or down in the same percentage points. Some of the other proposed measures are specific to each fishery, however, and they will result in differential impacts as discussed below for each individual action.

The proposed alternative for compliance with new annual catch limit (ACL) requirements (Economic impacts: Section 5.4.2), the proposed methods that would divide annual catch between the limited access and general category fisheries with separate buffers for management uncertainty and accountability measures are not likely to have considerable impacts on the revenues and profits for a substantial number of small entities in the short- to medium term. This is because the new system is expected to result in a similar landings stream compared to the status quo management. Even if the landing streams changed as a result of the new measures, the proposed measures will minimize the risk to the resource from overfishing because these sources of uncertainty are better accounted for through AMs. Minimizing risk to the resource is expected to keep the landings and economic benefits relatively more stable and reduce the uncertainty in business decisions with positive impacts on the small businesses.

Since the Council selected "no action" alternative regarding permit stacking/leasing, there will be no changes in the revenues and the profits of the small business entities compared to the current regulations (Economic impacts: Section 5.4.3). This means that no additional measures would be implemented to address excess capacity in the limited access scallop fishery, and as a result, the economic benefits from the scallop resource will fall short of optimum levels. The alternative options allow a single limited access vessel to have up to two limited access permits (3.3.2.1) or lease open area DAS or access trips from another vessel. They would provide increased flexibility for vessels to adjust their effort to changes in scallop biomass, management measures, fishing costs, and market conditions, resulting in a smaller fleet size, improved technical efficiency, lower fishing costs, higher profits and greater economic benefits for the participants of scallop fishery that are involved in stacking and leasing. These alternatives could potentially have some adverse distributional impacts, however, on the vessels that are not involved in permit stacking/leasing if fishing mortality increased as result of open area DAS transfers. Permit stacking could also result in loss of jobs both in the scallop harvesting sector and related waterfront businesses depending on the degree of consolidation of the scallop fleet. Therefore, alternatives to the no action (no permit stacking/leasing) would have positive impacts on some small business entities and negative impacts on others.

The adoption of "hybrid" overfishing definition could result in a reduction in net revenues (or producer surplus) compared to no action alternative in the short to medium term by about 5.8% (Table 49, Section 5.4.4.1). This alternative is expected have positive economic impacts over the long-term, however, since this definition will provide more flexibility to meet the area rotation objectives and is expected to increase catch by 10% with larger average scallop size. In addition, this alternative could potentially result in less area swept and could reduce adverse effects on bycatch, seabed habitats and EFH with positive indirect impacts on the scallop fishery, offsetting in part or in full short-term negative effects of the hybrid overfishing definition on landings and revenues.

The proposed action would modify the EFH areas closed to scallop gear under Scallop Amendment 10 to be consistent with Multispecies Amendment 13 and eliminate the areas closed for EFH under Amendment 10. As a result, effort could be allocated to Closed Area 1 where the scallops are larger instead of allocating more open area effort in areas with lower catch rates. This could have positive impacts on the scallop yield and revenues and lower fishing costs as the time spent for fishing would be lower in the relatively more productive areas. Therefore this alternative is expected to have positive impacts on revenues and profits from the scallop fishery and would partially offset some of the reduction in revenues in the short-term due the hybrid overfishing definition as discussed above.

The proposed adjustments related to the general category fishery including an increase in the possession limit from 400 pounds to 600 pounds, an increase in the maximum quota a vessel can harvest from 2 percent to 2.5 percent of the total limited access general category quota and a provision to allow a limited access general category vessel to permanently transfer their quota but retain their permit is expected to provide flexibility, to reduce fishing costs and increase profits for these vessels (Section 5.4.4.2). The measures to improve the current research set-aside program, the addition on of a third year of specifications to the framework process and the addition of new items to the list of frameworkable measures in the FMP are expected to have positive economic benefits on small business entities in the scallop fishery both in the and over the long-run.

In summary, although some specific measures proposed in this Amendment, such as the hybrid overfishing definition, catch limits and AMs could have some negative impacts on the revenues and profits from the scallop fishery in the short-term, the benefits from the other proposed alternatives including the measures that would reduce scientific or management uncertainty, the modification of the EFH areas, modifications to the LAGC possession limits and other related measures are expected to offset in part or in full these short-term negative effects. As a result, the aggregate economic impacts of the combined measures proposed in this Amendment are uncertain in the short-term and could range from a potentially small negative to potentially small positive impacts. Because these impacts are estimated to be relatively small, proposed action is not expected to have significant impacts on the viability of the vessels especially in a highly profitable industry such as the scallop fishery. The profit rate is estimated to exceed 20% of the gross revenue in the scallop industry providing for short-term cash reserves to finance operations through several months or years until the positive effects of the regulations start paying off (Table 53 of Section 5.4.3.2.2 and Table 13 of Appendix III).

In the long-term, the economic impacts of the combined measures on the participants of the scallop are expected to be positive. The aggregate impacts of the proposed measures could differ, however, from the economic impacts of the individual measures as discussed in the relevant subsections of Section 5.4 and summarized in the following section.

#### 6.10.3.4 Economic impacts of the individual measures

**Compliance with re-authorized Magnuson-Stevens conservation and management ACT: ACL structure and subcomponents**

- Rationale is provided in Section 3.2 and in Executive Summary.
- Economic impacts are analyzed in Section 5.4.2.1

**Summary of the impacts of the proposed option and mitigating factors**
This new requirement is expected to have long-term economic benefits on the fishery by helping to ensure that catch limits (ACLs) are set at or below ABC. The new system is expected to result in a similar landings stream compared to the status quo management. Even if the landing streams changed as a result of the new measures, the risk to the resource from overfishing due to scientific or management uncertainty would be minimized with the proposed measures because these sources of uncertainty are better accounted for. This, in turn, is expected to keep the landings and economic benefits relatively more stable and reduce the uncertainty in business decisions over the long-term. The separation of an ACL into two sub-ACLs with associated ACTs, one for the limited access scallop fishery (LA) and one for the limited access general category scallop fishery (LAGC) is expected to have positive impacts on the scallop fishery and its subcomponents (Section 5.4.2.1). As a result of the separate ACLs, one component of the fishery will not shut another out.

**Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery. The only other alternative is no action which does not comply with the requirements of the re-authorized Magnuson-Stevens conservation and management ACT. If "no action" is taken substantial impacts are not expected on scallop landings, revenues, producer and consumer surpluses, and net economic benefits from the scallop fishery. There are always risks of overfishing the resource due to the scientific and management uncertainty. The current measures do not have well-defined accountability and payback mechanisms if catch limits are exceeded due to these sources of uncertainty. Under no action, these risks could result in less-than-optimal economic benefits from the sea scallop resource.

**Placement of terms and buffers for uncertainty**

- Rationale is provided in Section 3.2.3.8.1 and in Executive Summary.
- Economic impacts are analyzed in Section 5.4.2.1

**Summary of the impacts of the proposed option and mitigating factors**:
Under the proposed action, the buffer for the LA fishery would be based on identifying the F rate with 25% probability of exceeding ABC to set the LA ACT, which provides a reasonable buffer based on this uncertainty that will not have undue impacts on the fishery while protecting the resource from overfishing. Establishment of buffers will reduce the risk of fishery exceeding its ACL, thus reducing the risk of overfishing the scallop resource with positive impacts on the overall scallop yield, revenues and total economic benefits from the fishery.
For the general category fishery (LAGC), there will be no buffer between the ACL and ACT because the LAGC fishery is managed under an IFQ system, so total catch from that fleet is more certain. Therefore, the economic impacts of this measure in LAGC participants will be positive. In addition, there is accountability incorporated into this structure because individual payback

would be required for any overages, and it would not be the burden of the fleet.

**Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.
Another alternative would set LA buffers at 10% of the LA sub-ACL which has less flexibility compared to the proposed action in terms adjusting the buffer according to the scallop resource conditions. For the limited access general category fishery, the alternative option would set the buffer at the 5% TAC allocation, thus would negative impacts on the revenues and profits of the participants of this fishery compared to status quo revenues and profits, especially on vessels that do not exceed their allocations.

**<u>Management uncertainty and Accountability Measures (AM)</u>**

- Rationale is provided in Executive Summary and in Section 3.2.1.2
- Economic impacts are analyzed in Section 5.4.2.2

**Summary of the impacts of the proposed option and mitigating factors**:
Limited Access AMs will consist of the use of an ACT, and an overall DAS reduction in the subsequent year to account for any overages. The overall economic impacts in the short-term on the participants of the scallop fishery will depend on how the ACTs and proposed buffers affect the total scallop landings compared to status quo (No Action) landings. Exceeding ACT in one year will have positive economic impacts on the participants of the scallop fishery in that year, followed by negative impacts in the subsequent year, so the short-term impacts averaged over these two years would be neutral or small. The proposed action also includes a disclaimer for when LA AM would not be triggered even if LA sub-ACL exceeded. If there is no biological harm and updated estimates of F are actually lower than what was projected there will be no reason for a DAS reduction in the next the subsequent year, minimizing any potentially negative impacts from AMs.

For the LAGC fishery, if an individual vessel exceeds their IFQ, any outstanding overage would be deducted from their IFQ in the following year. An individual is subject to any AMs that may be associated with leased quota. Similarly, this action proposes if NGOM component of the fishery exceeds the overall hard-TAC (equal to the NGOM ACL) after all data is final, then the hard TAC the following year could be reduced by that amount the following fishing year, or by mid season the following fishing year if data are not available (i.e. reduction on June 1 if necessary). Again, exceeding ACT in one year will have positive economic impacts on the participants of the scallop fishery in that year, followed by negative impacts in the subsequent year, so the short-term impacts averaged over these two years would be neutral or small. These measures will help to reduce the risks of exceeding ACLs due to the management uncertainty specific to the limited access and LAGC fisheries and will have positive impacts on the scallop yields and economic impacts from the fishery as a whole over the long-term.

**Comparison of the impacts with the alternative options:** The other alternative would include AMs being activated two years after the fishing year. A timely adjustment of the ACTs will reduce the negative impacts and risks of overfishing on the scallop resource sooner. If this prevents a decline in the scallop biomass and yield over the long-term, the economic benefits of instituting AMs in the next fishing year will exceed the economic benefits of adjusting the allocations in a later fishing year. On the other hand, postponing the adjustment for one year will provide time for the scallop vessels to adjust their business plans to a reduction in allocations due to exceeding ACLs with positive economic benefits.

**Trigger of LA AM disclaimer and allocations to the LAGC**

- Rationale is provided in Executive Summary and in Section 3.2.3.9.1.1
- Economic impacts are analyzed in 5.4.2.2.4

**Summary of the impacts of the proposed option and mitigating factors**:
If the LA AM disclaimer is triggered, 5.5% of the difference between the exceeded LA sub-ACL and the actual LA landings will be allocated to the LAGC fleet the following fishing year. This measure is consistent with Amendment 11 which allocates the LAGC fishery 5.5% of projected catch. If LA fishery catches more than projected because projections underestimated catch and biomass, this implies that LAGC TAC should have been higher and allocating 5.5% of the difference between the actual and projected catch provides that the LAGC fishery receives its 5.5% of the total catch. Therefore, this measure will have positive economic impacts on the LAGC vessels and will prevent LA fishery from receiving a higher share of the total catch than allocated to them by Amendment 15 provisions.

**Comparison of the impacts with the alternative options:** There are no alternatives that would generate higher economic benefits for the participants of the scallop fishery.

**ACLs and Accountability Measures (AMs) for Yellowtail Flounder**

- Rationale is provided in Executive Summary and in Section 3.2.3.11.2
- Economic impacts are analyzed in Section 5.4.2.4

**Summary of the impacts of the proposed option and mitigating factors**:
The proposed action includes an accountability measure for a sub-ACL of yellowtail flounder that has been allocated to the scallop fishery under the multispecies plan. This measure proposes a seasonal closure of areas with high YT bycatch rates if the scallop fishery exceeds their YT sub-ACL allocation. The area would be closed in the subsequent year for a specified period of time to only limited access scallop vessels and general category vessels would be exempt from YT accountability measures. This measure could increase fishing costs and have negative impacts on the scallop revenues and profits if the effort is moved to less productive areas with lower LPUE and to areas with a higher percentage of smaller scallops that are usually sold at a lower price compared to larger scallops. Implementation of the closure in the subsequent year, rather than in-season, will however prevent derby style fishing and minimize the negative impacts on prices and revenues associated with it. Because one of the closure areas encompasses a large part of the Southern New England LAGC fishery, exemption of the LAGC trips from this accountability measure will prevent high distributional impacts for LAGC vessels.

**Comparison of the impacts with the alternative options:** The alternative that would close the whole yellowtail stock area will have greater negative impacts on scallop revenues and profits compared to options that would close only specific portions of areas with high yellowtail bycatch. The alternatives that would institute either a fleet maximum DAS or an individual maximum number of DAS that can be used in a stock area for year 3 to account for an overage of the YTF sub-ACL in year one alternative could reduce the negative impacts on scallop revenues, costs, and total economic benefits by preventing derby fishing and allowing more time for the scallop fleet to make adjustments for exceeding the yellowtail ACLs. These options could increase the enforcement costs, however, by making it necessary to monitor DAS-used by yellowtail stock areas.

**<u>No Action on both the stacking and leasing alternatives (Section 3.3)</u>**

- Rationale is provided in Executive Summary and in Section 3.3
- Economic impacts are analyzed in Section 5.4.3.1

**Summary of the impacts of the proposed option and mitigating factors**:
The proposed action will not have any economic impacts on the participants of the scallop fishery compared to the present circumstances since this alternative will continue the measures under no action. This means that no additional measures would be implemented to address excess capacity in the limited access scallop fishery, and as a result, the economic benefits from the scallop resource will fall short of optimum levels.

**Comparison of the impacts with the alternative options:** The alternative options allow a single limited access vessel to have up to two limited access permits (3.3.2.1) or lease open area DAS from another vessel subject to fishing power and mortality adjustments. These options would provide increased flexibility for vessels to adjust their effort to changes in scallop biomass, management measures, fishing costs, and market conditions, resulting in a smaller fleet size, improved technical efficiency, lower fishing costs, higher profits, larger producer surplus, and greater total economic benefits for the scallop fishery. The measures included restricted permit stacking to two vessels and leasing to twice of the DAS allocations to prevent excess consolidation and limit potential increases in catch from stacking and/or leasing. These alternatives could potentially have some adverse distributional impacts on the vessels that are not involved in permit stacking/leasing if fishing mortality increases as result of open area DAS transfers. Permit stacking could also result in loss of jobs both in the scallop harvesting sector and related waterfront businesses depending on the degree of consolidation of the scallop fleet and could have potentially negative impacts on other fisheries if scallop vessels redirect effort after leasing out scallop effort. Therefore, alternatives to the no action (proposed action) would have positive impacts on some small business entities and negative impacts on others.

**<u>Measures to adjust the current overfishing definition (OFD) to be more compatible with area rotation</u>**

- Rationale is provided in Executive Summary and in Section 3.4.1
- Economic impacts are analyzed in Section 5.4.4.1

**Summary of the impacts of the proposed option and mitigating factors**:
The adoption of “hybrid” overfishing definition could result in a reduction in revenues and profits compared to no action alternative in the short to medium term. During the first 10 years of the implementation, average scallop revenue per vessel net of trips costs (producer surplus, Table 130) could decline by about 5.8% during the first 10 years. This alternative is expected have positive economic impacts over the long-term, however, since this definition will provide more flexibility to meet the area rotation objectives and is expected to increase catch by 10% with

larger average scallop size. In addition, this alternative could potentially reduce area swept, thus would reduce adverse effects on bycatch, seabed habitats and EFH with indirect positive impacts on the scallop fishery. For example, a reduction in bycatch would prevent triggering yellowtail AM measures and the negative impacts on scallop landings and revenues associated with such a measure. This could offset some of the short-term potentially negative economic impacts from the hybrid OFD.

**Comparison of the impacts with the alternative options:** The status quo overfishing definition is estimated to result in higher revenues and profits in the short-term compared to the hybrid overfishing definition. This alternative was not selected by the Council because it is not consistent with the spatial management of the scallop fishery, have higher risks for the scallop resource and lower economic benefits for the scallop fishery over the long-term compared to the proposed measure.

**<u>IFQ rollover up to 15% of original annual allocation for the general category fishery.</u>**

- Rationale is provided in Executive Summary and in Section 3.4.2.1.2
- Economic impacts are analyzed in Section 5.4.4.2.2

**Summary of the impacts of the proposed option and mitigating factors**:
This measure will provide flexibility and as a safety mechanism for the general category IFQ owners in the case of bad weather/unforeseen circumstances at the end of the fishing year that prevent them from using their entire quota. As a result, this will give opportunity to vessels to land their unused quote in the next year with positive economic impacts on the LAGC fishery and on overall scallop revenue and profits.

**Comparison of the impacts with the alternative options:** No action alternative will have smaller economic benefits compared to the proposed option. A full roll over option would have higher economic benefits than the proposed option. On the other hand, transferring a larger portion or the entire amount of the unused quota could increase management uncertainty for the following fishing year with negative impacts on the quota allocations and economic benefits in the future years. The proposed 15% percent rollover is a reasonable amount modeled after other IFQ programs and can be reduced if it increases management uncertainty for this portion of the fleet.

**<u>Modification of the general category possession limit to 600 pounds and the maximum quota to 2.5%</u>**

- Rationale is provided in Executive Summary and in Section 3.4.2.2.2
- Economic impacts are analyzed in Section 5.4.4.2.3 and 5.4.4.2.4

**Summary of the impacts of the proposed option and mitigating factors**: An increase in the general category possession limit from 400 lb. to 600lb. is expected to reduce the fishing time, trip costs and increase profits for these vessels. As a result, the proposed option will have positive economic impacts on the scallop fishery. The proposed action would also change the 2% maximum quota per vessel restriction to 2.5% of the total general category allocation. Making the ownership restrictions consistent would provide more flexibility to vessels to adjust their harvest levels to changes in the scallop resource conditions and will have positive impacts on profits.

**Comparison of the impacts with the alternative options:** The alternative that would eliminate or increase the possession limit to 1000 lb. per trip would produce higher benefits than the proposed option by reducing fishing costs further. This alternative would change the nature of the general category fishery, however, from a small scale fishery to a full-time operation like in the limited access fishery. This alternative was not selected because the Council continues to support that the general category permit remain a "small boat" permit.

**Allowing LAGC quota to be split from IFQ permits for limited access general category IFQ vessels**

- Rationale is provided in Executive Summary and in Section 3.4.2.4.1
- Economic impacts are analyzed in Section 5.4.4.2.5

**Summary of the impacts of the proposed option and mitigating factors:** Currently, LAGC vessels that want to permanently transfer quota have to purchase the LAGC permit as well as all the other permits a vessel has, which makes purchasing of LAGC IFQ very expensive. The proposed option will make movement of quota between fishermen easier and increases the likelihood that all quota will be harvested. It would allow fishermen to combine their allocations and to benefit from an economically viable operation when the allocations of individual vessels are too small to make scallop fishing profitable. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on revenues and profits for the participants of the LAGC fishery.

**Comparison of the impacts with the alternative options:** The alternative that would allow quota to move from LA vessels with IFQ to LAGC vessels, but not in the reverse direction, would have larger economic benefits for LAGC vessels. However this option was not chosen mostly due to concerns about difficultly monitoring mixed quota from the two categories since they are allocated quota from two separate pools.

**Community fishing associations in the LAGC scallop fishery**

- Rationale is provided in Executive Summary and in Section 3.4.2.5
- Economic impacts are analyzed in Section 5.4.4.2.6

**Summary of the impacts of the proposed option and mitigating factors:**
The proposed action includes "No Action" on implementing community fishing associations in the scallop fishery. Therefore, no change in economic benefits is expected.

**Comparison of the impacts with the alternative options:** The alternative would permit establishment of CFAs in the LAGC fishery with positive impacts on the participants by allowing fishermen to combine their allocations and to fish using fewer vessels in order to reduce fishing costs. Under these conditions, general category scallop TAC is likely to be fully utilized by qualifiers with positive impacts on revenues and profits. While concern has been raised about consolidation of the IFQ among LAGC participants, the Council did not choose to include CFAs in the proposed action due to outstanding questions about consistency and implementation that were not fully developed in this DEIS.

**Measures to address EFH closed areas if Phase II of the EFH Omnibus Amendment is delayed**

- Rationale is provided in Executive Summary and in Section 3.4.3
- Economic impacts are analyzed in Section 5.4.4.3

**Summary of the impacts of the proposed option and mitigating factors:**
The proposed option would modify the EFH areas closed to scallop gear under Scallop Amendment 10 to be consistent with Multispecies Amendment 13 and eliminate the areas closed for EFH under Amendment 10. As a result, effort could be allocated to Closed Area 1 where the scallops are larger instead of allocating more open area effort in areas with lower catch rates. This is estimated to have positive impacts on the scallop resource, future yield and to increase the scallop revenues by about $8 million (assuming a price of $7 per lb.) per year. Fishing in more productive areas would also reduce the fishing costs. Therefore the proposed measure is expected to have positive impacts on revenues and profits from the scallop fishery.

**Comparison of the impacts with the alternative options:** There are no other alternatives that will have larger economic benefits on the participants of the scallop fishery.

**Measures to improve research set-aside program**

- Rationale is provided in Executive Summary and in Section 3.4.4
- Economic impacts are analyzed in Section 5.4.4.4

**Summary of the impacts of the proposed option and mitigating factors:** These alternatives are expected to have positive indirect economic benefits for the sea scallop fishery by improving the timing and administration of the research set-aside program. Having dedicated resource for funding research to survey access areas will improve the Council's ability to allocate the appropriate amount of effort to prevent overfishing and optimize yield. Exempting RSA projects (if identified in the proposal) from are crew restrictions, the seasonal closure in Elephant Trunk, and the requirement to return to port if fishing in more than one area will allow more flexibility and more effective research.
If as a result of these measures, the program can be more streamlined and worthwhile projects can occur with fewer obstacles, better and timelier research will result in indirect benefits on the scallop resource and yield and will increase economic benefits from the scallop fishery.

**Comparison of the impacts with the alternative options:** There are no other alternatives that will have larger economic benefits on the participants of the scallop fishery.

**No action for the scallop fishing year**

- Rationale is provided in Executive Summary and in Section 3.4.5
- Economic impacts are analyzed in Section 5.4.4.5

**Summary of the impacts of the proposed option and mitigating factors:** The proposed option is the no action alternative which keeps the scallop fishing year same as before, starting in March and ending next year in February. Thus this action will have no economic impacts on the participants of the scallop fishery.

**Comparison of the impacts with the alternative options:** The alternative that would change the fishing year to May 1 would have some positive impacts over the long-term by aligning the fishing year with the scallop survey. On the other hand, these alternatives would require a change in the business plans of the scallop fishermen and create some risks if plans do not materialize due to unforeseen conditions, increasing the compliance costs for the vessels.

**Addition of a third year of specifications to the framework process**

- Rationale is provided in Executive Summary and in Section 3.4.5.3
- Economic impacts are analyzed in Section 5.4.4.5.2

**Summary of the impacts of the proposed option and mitigating factors:**
The proposed action includes adding a third year of specifications to the framework process in order to prevent the outdated measures getting implemented due to the delay in the implementation of the two year framework actions. It will serve as a "safety mechanism" to prevent against "No Action" rollovers during implementation delays that do not make sense for the industry and may cause undesired negative effects or require further management intervention. Therefore, it will alleviate some of the implementation issues caused by the time lag between the fishing year and the time when the survey data becomes available. Since the measures that are created for Year 3 will result in landings more consistent with the updated scallop biomass estimates and PDT recommendations, this action is expected to have positive indirect effects on the participants of the scallop fishery.

**Comparison of the impacts with the alternative options:** There are no other alternatives that would result in larger economic benefits.

**Addition to the list of frameworkable items in the FMP:**

- Rationale is provided in Executive Summary and in Section 3.5
- Economic impacts are analyzed in Section 5.4.4.6

**Summary of the impacts of the proposed option and mitigating factors:**
Making the possession limit frameworkable would allow the Council to adjust the possession limit up or down in response to changing needs of the recently-implemented IFQ program. All the aspects of ACL management specified in this action would be able to be modified through framework actions and will allow the Council to adjust the specification of OFL, ABC, ACLs and ACTs, the buffers identified for management uncertainty or scientific uncertainty, the accountability measures for scallop ACLs and other sub-ACLs allocated to the scallop fishery to the changing resource conditions. The frameworkable items also include modification of the amount of the research set-aside program allocation and modification of the EFH boundaries, monitoring and reporting requirements associated with ACLs, timing of AM measures, and new ACLs that are not currently part of this program. Adding these to the list of frameworkable items will allow the Council to more easily adjust the allocations according to the resource conditions and as needed in terms of research priorities or to make further changes to benefit EFH should prolonged delays to the Omnibus EFH Amendment occur or if it is more practicable to make

adjustments by framework. As a result, these measures will have positive impacts on the scallop fishery and its participants.

**Comparison of the impacts with the alternative options:** There are no other alternatives that would result in larger economic benefits.

### 6.10.4 Indirectly affected industries

Indirect impacts include the impacts on the sales, income, employment and value-added of industries that supply commercial harvesters, such as the impacts on marine service stations that sell gasoline and oil to scallop vessels. The induced impacts represent the sales, income and employment resulting from expenditures by crew and employees of the indirect sectors. Given that the overall economic impacts of the combined measures proposed by this Amendment on the fleet revenues and profits will be small in the short-term, their indirect and induced impacts are not expected to be significant in the short-term as well. Over the long-term, however, the proposed action is expected to have positive economic impacts on the scallop fishery, and thus will have positive indirect impacts on the indirectly affected industries.

### 6.10.5 Identification on overlapping regulations

The proposed regulations do not create overlapping regulations with any state regulations or other federal laws.

## 6.11 E.O. 13132 (FEDERALISM)

The E.O. on federalism establishes nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. Previous scallop actions have already described how the management plan is in compliance with this order and the nine principles. Furthermore, this action does not contain policies with Federalism implications, thus preparation of an assessment under E.O. 13132 is not warranted.

## 6.12 E.O. 12898 (ENVIRONMENTAL JUSTICE)

The alternatives in this amendment are not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Native American peoples.

# 7.0 LIST OF PUBLIC MEETINGS

The Council provided the opportunity for public participation and comment during the development of Amendment 15 at just over 50 public meetings since November 2007. These meetings have been held in various locations in the Northeast and have included Council meetings, Scallop Committee meetings, Advisory Panel meetings, and Scallop Plan Development Team meetings. Meeting summaries and relevant motions for Amendment 15 for most of these meetings are accessible from the New England Fishery Management Council website at www.nefmc.org.

**Table 204 – List of public meetings the Council held related to development of Amendment 15**

| MEETING | LOCATION | DATE |
|---|---|---|
| Council Meeting | Hotel Viking, Newport, RI | 11/7/2007 |
| Scallop PDT Meeting | Starboard Galley, Newburyport, MA | 1/10/2008 |
| Scallop Committee Meeting | Sheraton Ferncroft, Danvers, MA | 1/25/2008 |
| Council Meeting | Sheraton Harborside, Portsmouth, NH | 2/12/2008 |
| A 15 Scoping Meeting | Omni Hotel, Newport News, VA | 4/1/2008 |
| A 15 Scoping Meeting | Congress Hall, Cape May, NJ | 4/2/2008 |
| A 15 Scoping Meeting | Holiday Inn by the Bay, Portland, ME | 4/7/2008 |
| A 15 Scoping Meeting | Holiday Inn Express, Fairhaven, MA | 4/8/2010 |
| Council Meeting | Holiday Inn by the Bay, Portland, ME | 6/3/2008 |
| Scallop PDT Meeting | Parker River Wildlife, Newburyport, MA | 6/25/2008 |
| Scallop Committee Meeting | Hilton Garden Inn, Warwick, RI | 7/8/2008 |
| Scallop PDT Meeting | Falmouth Tech Park, Falmouth, MA | 8/14/2008 |
| Scallop Advisory Panel Meeting | Radisson Airport Hotel, Warwick, RI | 8/20/2008 |
| Scallop Committee Meeting | Hotel Providence, Providence, RI | 9/10-11/08 |
| Scallop PDT Meeting | MA DMF, Gloucester, MA | 9/29/2008 |
| Council Meeting | Hilton Hotel, Mystic, CT | 10/7/2008 |
| Scallop PDT Meeting | Starboard Galley, Newburyport, MA | 10/27/2008 |
| Scallop Committee Meeting | Hilton Garden Inn, Warwick, RI | 11/3/2008 |
| Council Meeting | Sheraton Ferncroft, Danvers, MA | 11/20/2008 |
| Scallop PDT Meeting | Holiday Inn, Mansfield, MA | 12/16/2008 |
| Scallop Committee Meeting | Crowne Plaza, Warwick, RI | 1/22/2009 |
| Council Meeting | Sheraton Harborside, Portsmouth, NH | 2/11/2009 |
| Scallop PDT Meeting | Inn on the Square, Falmouth, MA | 3/11-12/09 |
| Scallop Committee Meeting | Hotel Providence, Providence, RI | 4/2/2009 |
| Council Meeting | Mystic Hilton, Mystic, CT | 4/9/2009 |
| Scallop PDT Meeting | NMFS, Gloucester, MA | 5/13/2009 |
| Scallop Advisory Panel Meeting | Sheraton Four Points, Revere, MA | 6/17/2009 |
| Scallop PDT Meeting | Radisson Hotel, Plymouth, MA | 7/22-23/09 |
| Scallop PDT Meeting | Crowne Plaza, Warwick, RI | 8/12/2009 |
| Scallop PDT & Jt. Groundfish PDT Meeting | Holiday Inn, Mansfield, MA | 8/24/2009 |
| Scallop Committee Meeting | Hotel Providence, Providence, RI | 9/1-2/09 |
| Scallop Advisory Panel Meeting | Crowne Plaza, Warwick, RI | 9/15/2009 |
| Scallop Committee Meeting | Crowne Plaza, Warwick, RI | 9/16/2009 |
| Council Meeting | Radisson Hotel, Plymouth, MA | 9/24/2009 |
| Scallop PDT Meeting | Starboard Galley, Newburyport, MA | 10/15/2009 |
| Scallop Committee Meeting | Hilton Providence, Providence, RI | 11/3/2009 |
| Council Meeting | Hyatt Regency, Newport, RI | 11/18/2009 |

| MEETING | LOCATION | DATE |
|---|---|---|
| Scallop Committee Meeting | Hilton Providence, Providence, RI | 5/19/2010 |
| Scallop PDT Meeting | Parker River Wildlife Refuge, Newburyport, MA | 6/8/2010 |
| SC A.15 Public Hearing | Holiday Inn by the Bay, Portland, ME | 7/12/2010 |
| SC A.15 Public Hearing | Seaport Inn, Fairhaven, MA | 7/13/2010 |
| SC A.15 Public Hearing | Chatham Bars Inn, Chatham, MA | 7/14/2010 |
| SC A.15 Public Hearing | Radisson Hotel, New London, CT | 7/19/2010 |
| SC A.15 Public Hearing | Congress Hall, Cape May, NJ | 7/20/2010 |
| SC A.15 Public Hearing | Omni Hotel, Newport News, VA | 7/21/2010 |
| Scallop Advisory Panel Meeting | Radisson Hotel, Warwick, RI | 7/27/2010 |
| Scallop Committee Meeting | Sheraton 4 Points, Revere, MA | 8/11/2010 |
| Scallop PDT Meeting | Holiday Inn, Mansfield, MA | 8/18/2010 |
| Scallop Committee Meeting | Radisson Hotel, Warwick, RI | 9/7/2010 |
| Scallop Advisory Panel Meeting | Courtyard by Marriott, Providence, RI | 9/22/2010 |
| Scallop Committee Meeting | Courtyard by Marriott, Providence, RI | 9/23/2010 |
| Council Meeting | Hotel Viking, Newport, RI | 9/29/2010 |

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