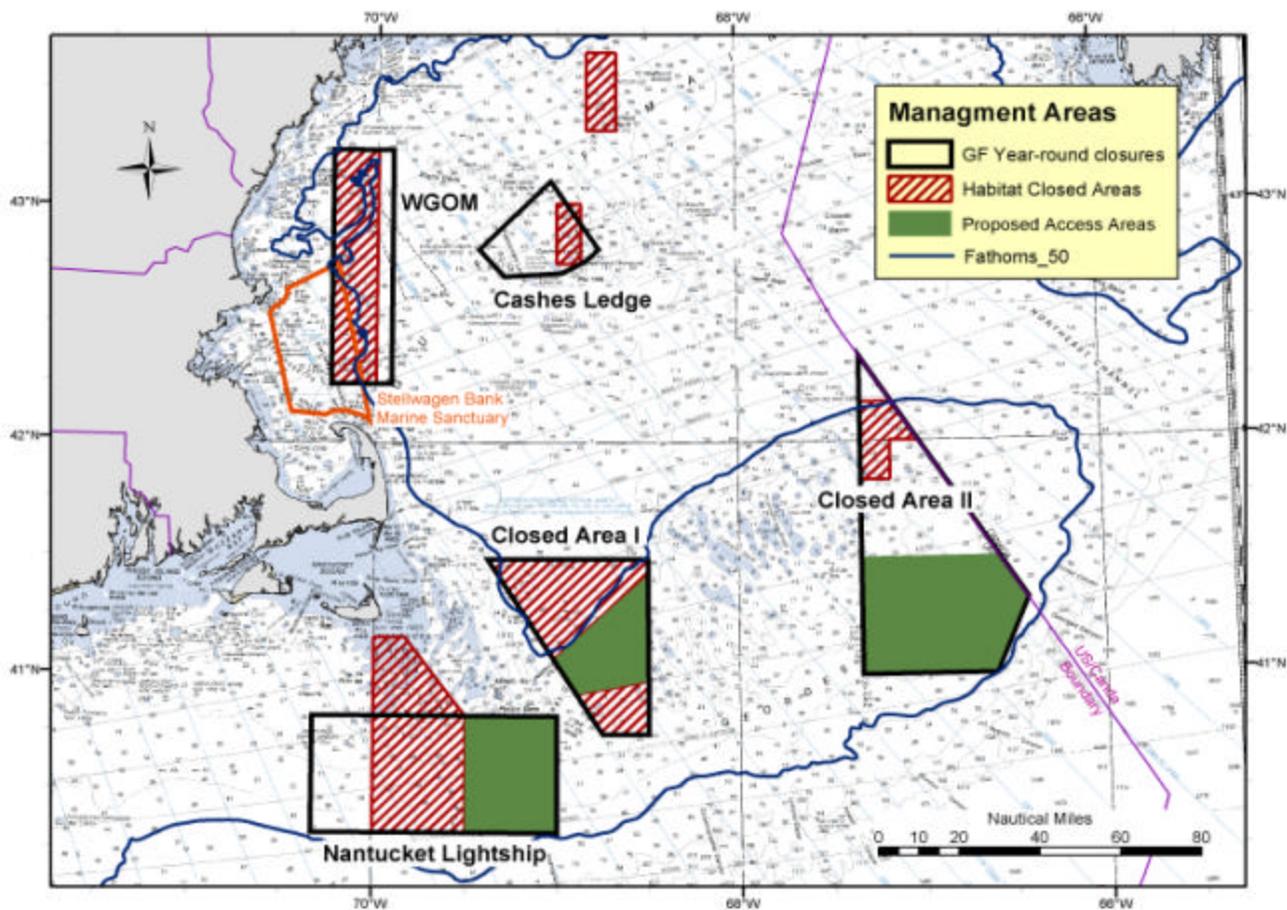


**Framework Adjustment 16 to the Atlantic Sea Scallop FMP
and
Framework Adjustment 39 to the Northeast Multispecies FMP
with an
Environmental Assessment, Regulatory Impact Review, and
Regulatory Flexibility Analysis**

Proposing Controlled Scallop Fishing in Portions of the Nantucket Lightship Area, Closed Area I, and Closed Area II during 2004 – 2007

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



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On the cover: Map of the Georges Bank region and the southern half of the Gulf of Maine, showing the boundaries of the proposed EFH closed areas and parts of the groundfish closed areas that would be open for controlled access scallop fishing in 2004 – 2007.

Cover Sheet

Abstract

Framework Adjustment 16/39 was developed as an addition to Amendment 10 to address and implement scallop area management in parts of the groundfish closed areas. Scallop biomass in portions of these areas has increased to high levels as a result of the closure to scallop fishing since 1994 to achieve groundfish mortality and rebuilding objectives. Although the Council wanted to allow controlled scallop fishing access starting with the 2004 fishing year, the specific issues associated with scallop fishing in the groundfish mortality closed areas were too complex and controversial to incorporate into the larger Amendment 10. Instead, Framework Adjustment 16/39 focuses on these issues, considering and analyzing the potential effects of alternatives to achieve the Scallop FMP goals with area rotation, without causing unacceptable impacts for groundfish habitat and bycatch.

This document amends the Atlantic Sea Scallop FMP via Framework Adjustment 16 and amends the Northeast Multispecies FMP through Framework Adjustment 39. Alternatives associated with Framework Adjustment 16 focus on allocations of fishing effort and scallop TACs, provisions to fund observers and research, enforcement provisions, and monitoring requirements. Alternatives associated with Framework Adjustment 39 focus on measures to minimize or control bycatch, including when and where scallop fishing may occur, as well as a limit on how much bycatch would be allowed. Because the alternatives and effects are intertwined, the document and analysis of impacts (Environmental Assessment) have been combined into a single document that describes and analyzes the proposed access program and various related management alternatives.

Total net benefits are expected to be slightly negative in the short term, but positive in the long term. In addition, the proposed access program is expected to minimize impacts on habitat and bycatch, in part due to reductions in fishing effort that would otherwise have occurred in the open fishing areas in Georges Bank and the Mid-Atlantic regions. As a result, total fishing time will be reduced while maintaining high scallop yield and net benefits. The proposed access program is expected to reduce fishing effort in the open areas of the Georges Bank region, where 50% of the open area effort is expected to otherwise occur in the environmentally sensitive Great South Channel. It is also expected to reduce fishing effort in the Mid-Atlantic region, where fishing mortality has been above sustainable levels and where interactions with sea turtles have been problematic.

Another effect of this framework adjustment is to modify the area rotation plan in Amendment 10, so that it is compatible with the EFH closed areas that the Council adopted in Amendment 13 to the Multispecies FMP. Amendment 10 to the Scallop FMP contemplated access to areas that had previously been open to limited scallop fishing in 1999 and 2000, but some of these areas overlapped the new EFH closed areas.

1.0 EXECUTIVE SUMMARY

This framework adjustment was prepared by the New England Fishery Management Council (NEFMC), in consultation with the Mid-Atlantic Fishery Management Council (MAFMC) and the National Marine Fisheries Service (NMFS). Two MAFMC members sit on the NEFMC's Scallop Oversight Committee and vote on the alternatives that are recommended to the NEFMC for approval. In addition, the NEFMC utilizes a Plan Development Team (PDT) of scientists and an Advisory Committee of fishery experts. Four of seven PDT members are employed by the NMFS, either at the Regional Office in Gloucester, MA or the Northeast Fisheries Science Center in Woods Hole, MA. Five of the fifteen Advisory Committee members are from the Mid-Atlantic region. In addition, the Groundfish and Habitat Oversight Committee also met and developed alternatives and recommendations for consideration by the Council. The Groundfish Oversight Committee also has a voting member who drawn from the MAFMC membership.

1.1 *Summary of Purpose, Need for Action, and Major Issues*

The purpose of this framework action is to develop management measures to control scallop fishing effort in re-opened portions of the Georges Bank groundfish closed areas and correct the inconsistencies between the Scallop and Multispecies FMP with regard to habitat closures. The proposed action is needed to allow access to large, valuable scallops in the Georges Bank groundfish areas; while minimizing bycatch impacts for groundfish, skates, monkfish, and other finfish; and improving the practicability of the habitat closed areas adopted by the Council in Amendment 13 to the Multispecies FMP.

Secondarily, two areas of perceived inequities are addressed. The Council developed management measures to allow vessels with general category scallop permits to target scallops in the re-opened area. Under previous access programs, only vessels with a limited access scallop permit had been allowed to target scallops in the re-opened areas. The framework action also includes an alternative to modify the method to allocate controlled access trips and DAS to part-time and occasional scallop vessels, correcting a potential inequity caused by an allocation strategy in Amendment 10 using rounding.

Although total net economic benefits of the action are nearly identical to the No Action alternative, there are important non-economic benefits that are analyzed in the Environmental Assessment, such as minimizing bycatch and adverse impacts on essential fish habitat. Achieving the Scallop FMP's annual $F=0.2$ fishing mortality target with access allows the plan to allocate considerably fewer DAS in the open parts of the Georges Bank and Mid-Atlantic regions. By allowing access, fishing effort and bottom contact time in the Georges Bank region is expected to decline in exchange for managed access and moderate increases of impacts in the closed groundfish areas, where there are less habitat sensitive areas than in the EFH closed areas. Much of the reduced fishing time, compared to the No Action alternative, will be in the Great South Channel, having benefits for groundfish bycatch and habitat. The action is also expected to reduce scallop fishing effort in the Mid-Atlantic region, having a benefit from reducing interactions with sea turtles and reducing mortality of young scallops that are presently abundant in the region.

The major issues addressed in the proposed action include:

- Minimizing groundfish bycatch so that the proposed access program does not impact the rebuilding strategy or results from Amendment 13 management measures,

- Seasonal vs. year around access to the proposed areas, balancing the effects on groundfish vs. the needs of the scallop fishery (e.g. effects on markets, seasonal changes in meat yield, and safety)
- Establishing access area boundaries that minimize bycatch, while preserving the ability to access areas remaining closed unless they are classified as a habitat closed area to conserve EFH.
- The practicability of habitat closed areas if both plans continue to apply,
- Allowing access to a part of Closed Area I that has not been accessed since 1994 by the use of mobile fishing gear

1.2 Summary of Background Information

The Council initiated an ad hoc¹ framework adjustment in November 2003, following on the heels of Amendment 10, which the Council was submitting for Secretarial review and approval. The framework was initiated to consider a controlled access program for the groundfish closed areas, an action that had been contemplated in the Amendment 10 rotation area management strategy. It was also initiated to correct inconsistencies between the EFH closed areas adopted in Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP.

The Council held several meetings during December 2003 and January 2004 to develop and consider alternatives to address these issues. The Scallop and Groundfish PDTs met jointly in early December to examine the existing data and recommend ways to address the issues. A follow up Scallop PDT meeting was held in early January to update the Amendment 10 projections, using 2003 survey data which were unavailable for Amendment 10 analyses and taking into account the abundance estimates from a more-precise video survey conducted in the access areas by SMAST, as part of a broader survey that the university conducted. Groundfish bycatch projections were also finalized, working with the Groundfish PDT and using the Amendment 13 groundfish biomass projections.

Habitat, Groundfish, and Scallop Oversight Committee meetings were held in mid-January to review the analyses and recommendations from the PDTs. Staff also developed comparative analyses of the habitat alternatives, because the information already existed in Amendments 10 and 13, and the alternatives were relatively straightforward. Scallop Advisors also met during this time and provided recommendations to the Scallop Oversight Committee. The committees adopted many of the recommendations from the PDTs and advisors as alternatives, but some issues (particularly on management alternatives to manage scallop access with a TAC for yellowtail flounder bycatch) needed more work and there was no opportunity for more committee meetings.

The committee recommendations and this additional work by an ad hoc working group were presented at the late January 2004 Council meeting for consideration and approval as a framework alternative. One major issue at the meeting was whether the access program could be managed with a target TAC², using the recommendations of an ad hoc working group that was appointed by the Oversight Committee³. This ad hoc working group developed recommendations, which were then presented to the full Council on January 27, 2004, some of which were included in the final four options for transferring

¹ An ad hoc framework adjustment may be initiated at any time in response to a management need and is distinct from a regular, biennial framework adjustment that is associated with a SAFE Report.

² Also known as a 'soft' TAC.

³ The committee appointed Dr. Trevor Kenchington, Mr. Ron Smolowitz, and Mr. Andrew Applegate to the ad hoc working group to develop a proposed solution to the bycatch issue. The ad hoc working group met via a conference call on January 22, 2004.

unused DAS from controlled access areas to open fishing areas, when they were no longer accessible because yellowtail flounder bycatch reached the 10% TAC limit, or the limit if adjusted by the Regional Administrator on or after December 1 of a scallop fishing year. The Council consensus was that a hard TAC was needed to ensure that the access program would not threaten groundfish rebuilding or endanger special access programs for the groundfish fleet.

Final analyses of the impacts of the alternatives on the environment were conducted, focusing on impacts to the scallop, groundfish, and skate resources as well as impacts on habitat and sea turtles, and included in a draft document for a final Council meeting in late February, where the Council approved the final alternative and voted to submit the framework adjustment to the Secretary of Commerce.

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. Since this framework action proposes to lessen restrictions as assessed in the skate baseline review, the Skate PDT must evaluate whether this action will have negative impacts on overall mortality of skate species in a formal rebuilding program. Section 7.1.4 evaluates the impact of this action on skate mortality, and concludes that the slight increase in total allocated DAS and access into portions of the groundfish mortality closed areas proposed in this action will not have negative impacts on skate mortality.

1.3 Summary of Proposed Action

This framework adjustment is proposed to change the regulations associated with both the Atlantic Sea Scallop and Northeast Multispecies FMP. This document contains a description of the proposed action in Section 4.1 and analyzes the direct and indirect impacts of the proposed action in Section 6.1. This framework adjustment is a combined action that would authorize vessels to target sea scallops in the Georges Bank closed areas, which are otherwise closed to scallop fishing by the Multispecies FMP. As such, the proposed action is presented as one section, but where appropriate notes which regulations would be modified to allow access. The cumulative effects of the measures in the proposed action, including the effects of past, present, and reasonably foreseeable future actions, are analyzed in Section 6.3. The final alternative is composed of eleven management measures as follows:

1. Access area boundaries, which are consistent with EFH closed areas to allow fishing on concentrated scallop biomass in the groundfish closed areas (Section 4.1.1)
2. Adoption of habitat closed areas that are consistent with Amendment 13 to the Northeast Multispecies FMP (Section 4.1.2)
3. A dredge-only restriction for fishing in the access areas to minimize bycatch and bycatch mortality (Section 4.1.3)
4. Yellowtail flounder TACs and provisions to minimize bycatch (Section 4.1.4)
5. Changes in finfish possession limits to minimize bycatch and bycatch mortality (Section 4.1.5)
6. Seasons when scallop fishing would be allowed to minimize bycatch and bycatch mortality (Section 4.1.6)
7. Enhanced sea sampling to improve precision of bycatch estimates (Section 4.1.7)
8. Provisions to enhance enforcement monitoring and compliance (Section 4.1.8)
9. Expanded reporting requirements to improve monitoring of the fishery and data collection (Section 4.1.9)
10. A mechanical area rotation strategy, with appropriate scallop fishing mortality targets and trip/DAS allocations for limited access scallop vessels. The allocations include unequal scallop possession limits with an adjustment for part-time and occasional trip/DAS allocations to make them consistent with open area allocation procedures. (Section 4.1.10)

11. An access program for vessels with general category scallop permits, including enhanced reporting requirements and a two-percent TAC set-aside. (Section 4.1.11)

1.4 Summary of Alternatives to Proposed Action

Alternatives to the proposed action are described in Section 4.2 and a comparative analysis of the direct and indirect impacts of the alternatives is presented in Section 6.2. Section 4.2 also includes alternatives that were eventually adopted in the proposed action, because they also contain various management options that were not ultimately selected. Rationale for each of the alternatives, and the allocations if applicable, is also provided with the description of the alternative. In addition, six alternatives that the Council considered and rejected without further analysis are outlined in Section 4.3. The alternatives to the proposed action in Section 4.2 include:

1. A No Action alternative that allocates a higher DAS allocation for vessels to fish in open fishing areas, but does not allow scallop fishing access in the groundfish closed areas (Section 4.2.1)
2. The proposed action and three alternatives for area access boundaries (Section 4.2.2)
3. The proposed action and two status quo alternatives (depending on approval of plan amendments currently under review) (Section 4.2.3)
4. The proposed action alternative and two alternatives to require vessels to use certain gear on area access trips (Section 4.2.4)
5. Three proposed action alternatives and two alternatives setting limits on the annual catch of yellowtail flounder. One alternative includes three unapproved options for transferring unused area access DAS allocations to open fishing areas when area access is closed due to yellowtail flounder catches. (Section 4.2.5)
6. Two proposed action alternatives and three alternatives for groundfish possession limits (Section 4.2.6)
7. The proposed action and two alternatives for access seasons to minimize bycatch and bycatch mortality (Section 4.2.7)
8. The proposed action and two alternatives for enhancing sea sampling and providing funding to partially compensating vessels for the cost of carrying an observer (Section 4.2.8)
9. Three enforcement provisions, all adopted for the proposed action (Section 4.2.9)
10. Two reporting requirement provisions, both adopted for the proposed action (Section 4.2.10)
11. The proposed action and a status quo alternative for a mechanical rotation strategy, including potential DAS and trip allocations (Section 4.2.11)
12. The proposed action and a status quo alternative for allocating part-time and occasional DAS and trips for fishing in the access areas (Section 4.2.12)
13. The proposed action and a status quo alternative (i.e. no access) for vessels with general category permits to target sea scallops in the proposed access areas (Section 4.2.13)

1.5 Summary of Environmental Consequences

Direct and indirect impacts of the proposed action are analyzed and discussed in Sections 6.1 to 6.2, and the cumulative effects are analyzed in Section 6.3. The analysis indicates that the impacts of the proposed action are not significant and a Finding of No Significant Impact is justified based on these analyses in the Environmental Assessment.

The proposed action is expected to allow the scallop and groundfish fisheries to harvest the maximum sustainable yield, while reducing environmental impacts on essential fish habitat, on bycatch of regulated groundfish and other finfish, and on protected species (i.e. sea turtles). It would do this by allowing the scallop fleet to target large scallops that have built up within the groundfish closed areas,

while avoiding fishing in more environmentally sensitive areas and by reducing open area effort allocations and scallop mortality. Because fishing on concentrated large scallops is more efficient, the proposed action is expected to reduce bottom contact time, which all other things being equal will reduce bycatch and the amount of bottom impacted by scallop fishing. The proposed access area program is expected to reduce scallop fishing effort in open areas of the Georges Bank region, where 50% of the effort is expected to occur in the environmentally sensitive Great South Channel. It is also expected to reduce fishing effort in the Mid-Atlantic region, where scallop fishing mortality has been above sustainable levels and where interactions with sea turtles have been problematic.

Total net benefits are expected to be -\$1.4 million in the short-term (2004-2007) and +\$45 million over the 10 year projection period, while producer surplus which incorporates cost savings and is realized by the fishing industry (vessel owners and crew) is expected to be +\$31.2 million in the short-term and +\$70 million over the 10 year projection period. Although total net benefits are marginally negative in the short term, the Council believes that the unquantifiable, but tangible benefits that accrue from reducing mortality on smaller scallops in the Mid-Atlantic, from allowing Georges Bank open area scallop biomass to increase, and from reducing fishing time (thereby reducing bycatch and habitat impacts) are considerably greater than the quantifiable total net benefit reduction from access. Benefits from potential reductions in bycatch mortality that may affect the future groundfish yield cannot be quantified.

The proposed action includes several measures to minimize groundfish bycatch, so that the proposed access program keeps catches below 10% of the overall groundfish TACs. Based on observed catch rates in 2000, projected forward based on stock assessment forecasts, yellowtail flounder has the highest catches as a percent of the overall TACs. The proposed action includes a hard TAC for yellowtail flounder catches, which will be carefully monitored and estimated via enhanced sea sampling and reporting. Although difficult to estimate, the added catches in the access areas are expected to be partially or completely mitigated by reductions in fishing effort elsewhere.

In addition, the proposed action limits access from June 15 to January 31, a period that avoids scallop fishing in the access areas during peak groundfish spawning activity. Besides potential disruption of spawning, the season would also avoid uncertain periods when bycatch could be considerably higher than estimated by quantitative forecasts in this document. The Council considered these benefits against potential effects on scallop prices by concentrating landings during half of the fishing year, changes in meat yield due to a seasonal spawning cycle, and potential threats to safety due to autumn and early winter weather. Scallop fishing is a year round occupation conducted by large vessels that are designed to spend considerable time at sea. If market prices decline temporarily or if meat yields decline, the proposed season is sufficiently long for fishing vessels to adapt to these events. The ability to transfer unused trips to open fishing areas if the areas close due to yellowtail flounder catches helps alleviate these concerns as well.

The proposed action also establishes area access boundaries that will avoid areas with more sensitive EFH and also avoid fishing in areas with low scallop biomass and potentially higher groundfish bycatch. Bycatch estimates for the proposed access areas are relatively low, from a combination of less bottom contact time, high scallop abundance, and seasons when groundfish bycatch in the areas has been low.

The practicability of the existing EFH closed areas (pending Secretarial approval of both Multispecies and Scallop FMP amendments) is improved by making the closed areas consistent with each other. Without taking action, the analysis in this document suggests that the available scallop yield from Closed Area I would be cut by 2/3rds, if and when access is allowed in areas not considered as EFH closed areas.

Finally, there was careful consideration of the proposed access to an area in the south-central part of Closed Area I, which offsets the loss of access to scallops in the north-central part of Closed Area I due to EFH closed areas in Amendment 13 to the Multispecies FMP. New data and a more intense look at existing data within this new area (which had not been open to fishing since 1994) was performed. Concerns were raised about areas of hard bottom substrates in the proposed access area, based on multi-beam sonar images collected by the USGS. Other video survey data collected by SMAST were also evaluated and found that while there was some hard bottom identified, there were large parts of the proposed access area that were predominately sand and sandy gravel, substrates that are less vulnerable to alteration by scallop dredges. Considering these concerns, the Council found that keeping the area closed would be impractical without changing the boundaries of the EFH closed areas that the Council adopted in Amendment 13.

1.6 Summary of Cumulative Effects

A cumulative effects analysis for past, present, and reasonably foreseeable future actions is provided in Section 6.3. These analyses were performed with respect to their effect with respect to the following Valued Ecosystem Components (VECs):

- Sea scallop resource under US jurisdiction
- Scallop fishing fleet and infrastructure (suppliers, maintenance, facilities, processors)
- Vulnerable finfish resources caught as bycatch in the scallop fishery
- Essential Fish Habitat (EFH) for finfish, scallops, and shellfish under Federal management
- Protected species
- Human safety at sea
- Fishing-dependent communities

Results of the analysis (see Section 6.3.7.1.4) indicate that no significant cumulative impacts were identified as a result of the proposed action.

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2.4 List Of Acronyms

- A10** – Amendment 10 to the Atlantic Sea Scallop Fishery Management Plan
A13 – Amendment 13 to the Northeast Multispecies Fishery Management Plan
B_{MSY} – Biomass Maximum Sustainable Yield
BO – Biological opinion
CEQ – Council on Environmental Quality
CA1 – Closed Area I
CA2 – Closed Area II
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.
DAS – Day-at-sea
EA – Environmental Assessment
ESA – Endangered Species Act
EFH – Essential Fish Habitat
EFH designation life stages
 A – Adult life stage
 J – Juvenile life stage
 E – Egg life stage
FMP – Fishery Management Plan
FR – Federal Register
FSEIS – Final supplemental environmental impact statement
FW13 – Framework Adjustment 13 to the Atlantic Sea Scallop Fishery Management Plan, which allowed access for scallop fishing in parts of Closed Area I, Closed Area II, and the Nantucket Lightship Area
GB – Georges Bank
HAPC – Habitat Area of Particular Concern
LPUE – Landings per unit effort, usually a DAS in this document
IRFA – Initial Regulatory Flexibility Analysis
MAFMC – Mid-Atlantic Fishery Management Council
NAAA – Northwest Atlantic Analysis Area
NEFMC – New England Fishery Management Council
NEFMC – New England Fishery Management Council
NEFSC – Northeast Fisheries Science Center
NEPA – National Environmental Policy Act
NLSA – Nantucket Lightship Area
NMFS – National Marine Fisheries Service
PSP – Paralytic Shellfish Poisoning
RIR – Regulatory Impact Review
SAP – Special access program – a provision in the Multispecies FMP that may allow special fisheries in closed groundfish areas under special rules to limit the impact on overfished species.
SARC – Stock Assessment Review Committee
SAW – Stock assessment workshop
SBNMS – Stellwagen Bank Marine Sanctuary
SEIS – Supplemental Environmental Impact Statement
SMAST – University of Massachusetts Dartmouth School of Marine Science and Technology
VMS – Vessel Monitoring System
TAC – Total Allowable Catch. This includes discards for finfish species, but not for scallops which have a much lower discard mortality rate.
U10 – A classification of large scallops, less than 10 meats per pound.
USGS – United States Geological Survey

3.0 INTRODUCTION AND BACKGROUND

3.1 *Purpose and Need for the Action*

Building on the experience of previous ad hoc scallop area closures and controlled access, Amendment 10 to the Sea Scallop FMP formally introduced rotation area management, including an adaptive strategy using flexible boundaries to close areas when scallops are small, controlled access programs to manage the fishery in re-opened areas, and area-specific DAS allocations. Contemplated for rotation area management and analyzed in the FSEIS, it also included a plan to allow scallop fishing in parts of the Georges Bank groundfish areas, which except for limited scallop fishing in 1999 and 2000 have been closed to scallop fishing since 1994. The Amendment 10 analysis suggested that substantial gains in long-term scallop yield and reductions in environmental impacts could be achieved by a mechanical rotation system for scallop fishing in the closed groundfish areas.

Amendment 10 also considered a broad range of alternatives to minimize impacts on EFH to the extent practicable. The Council considered 13 alternatives to address EFH conservation, seven of the alternatives proposing various long-term, year around area closures for scallop fishing. These alternatives were evaluated for efficacy and practicability with respect to scallop fishery management and based on these considerations, the Council chose four alternatives, one of them using habitat closed areas that were most closely aligned with areas that had been closed to gears capable of catching groundfish since 1994. By choosing these areas, the FMP would provide continuing protection for complex and sensitive habitats that had undergone 10 years of recovery without alteration by bottom tending mobile gear. The chosen habitat closed areas would also preserve access to valuable scallop fishing areas that had been temporarily open to fishing during 1999 and 2000. The Council considered and also approved three other habitat conservation alternatives, encompassing the effects of scallop management and area rotation, 4-inch rings, and funding of scallop-related habitat research. Fishing is expected to be more efficient when using 4-inch rings when most scallops in the area are greater than 110 mm. Due to the higher efficiency, bottom contact time is expected to decline by 10-15 percent when large scallops are available to the fishery, such as those in the proposed access areas. These habitat conservation measures that do not rely on area closures would remain in effect with or without changing the habitat closed area boundaries in this action.

While Amendment 10 was under consideration, the Council was also developing a major amendment to the Northeast Multispecies FMP, regulating the groundfish fisheries. The amendment included new rebuilding strategies and fishing mortality targets, potential changes to groundfish closed areas to achieve mortality goals, and alternatives to minimize impacts on groundfish EFH. Seven alternatives were considered that would create habitat closed areas as a means to minimize impacts on EFH. Since the two amendments were under development at nearly the same time, five of the closed area alternatives (Alternatives 3, 4, 5, 6, and 7⁴) were identical to closed area alternatives in Amendment 10 to the Scallop FMP, except that they would have applied to a broader range of gears that adversely affect groundfish EFH. The boundaries of Alternative 6 were identical to the habitat closed areas that the Council approved in Amendment 10. Both EFH closed area actions in each amendment would have applied to scallop fishing gear.

⁴ The analogue to Alternative 7 in Amendment 13 is Alternative 9 in Amendment 10, which would have expanded the types of prohibited gears in the groundfish closed areas to achieve habitat conservation. In Amendment 10, Alternative 9 would have closed the four year round groundfish closed areas to all scallop fishing gears, preventing any type of scallop fishing even under highly regulated conditions, like the ones being considered by this action.

Due to timing, a late developing alternative in Amendment 13 (Alternative 10, options a and b) could not be introduced and analyzed in time for the public hearings on Draft Amendment 10, but were considered separately in Amendment 13 to the NE Multispecies FMP. During the approval of final alternatives for Amendment 13 (which occurred after final approval of alternatives for Amendment 10 to the Scallop FMP), the Council determined that Alternative 10b was the most practicable closed area alternative for reducing impacts on groundfish EFH.

Thus the habitat closure alternatives that the Council approved in the two amendments were inconsistent and together would cause impracticable restrictions on scallop fishing, particularly when considering access to areas within the Georges Bank groundfish closed areas. In addition, the complexities and uncertainties of Amendment 13 made it impossible in Amendment 10 to the Scallop FMP to develop the access restrictions for scallop fishing in the groundfish closed areas. It would also have been extraordinarily difficult to develop rules for area access while simultaneously approving the area rotation strategy that the FMP would use to manage the scallop resource.

The purpose of this framework action is therefore to develop management measures to control scallop fishing effort in re-opened portions of the Georges Bank groundfish closed areas and correct the inconsistencies between the Scallop and Multispecies FMP with regard to the proposed habitat closures in both amendments.

Secondarily, two areas of perceived inequities are addressed. The Council developed management measures to allow vessels with general category scallop permits to target scallops in the re-opened area, something that has been an irresolvable issue that some feel has been inequitable, since only vessels with a limited access scallop permit had been allowed to target scallops in the re-opened areas. The framework action also includes an alternative to modify the method to allocate controlled access trips and DAS to part-time and occasional scallop vessels, correcting a potential inequity caused by an allocation strategy in Amendment 10 using rounding.

The proposed action is needed to allow access to large, valuable scallops in the Georges Bank groundfish areas; while minimizing bycatch impacts for groundfish, skates, monkfish, and other finfish; and improving the practicability of the habitat closed areas adopted by the Council in Amendment 13 to the Multispecies FMP. Over the four-year period (2004 – 2007) addressed by this action, the Council does not expect an improvement in scallop yield or quantifiable net benefits due to access. The scallop biomass in the open fishing areas is predicted to be considerably greater than previously thought, based on abundance data from the 2002 resource survey. Although there is a difference in producer surplus and fishing costs compared to the No Action alternative, total net benefits for the proposed action are virtually the same compared to No Action over the short term (2004 – 2007) and the long-term (10 years). This occurs because the optimal yield of scallops in the proposed access areas is nearly identical to the yield of scallops from the open fishing areas with a higher fishing mortality target under the No Action alternative.

On the other hand, access to the scallops in the closed areas, under controlled conditions to minimize environmental impacts, allows the FMP to reduce mortality and effort in open scallop areas while achieving the FMP's resource-wide fishing mortality target. It allows the FMP to reduce the open area DAS allocations, causing less total environmental impact. Substantial reductions of fishing effort and bottom contact in open fishing areas of the Georges Bank and Mid-Atlantic regions are expected, in exchange for a small and manageable increase of bycatch and habitat impacts within the closed areas during times and within areas where bycatch and habitat impacts are less of a concern. Reduced fishing effort and bottom contact in the Georges Bank region is expected to have beneficial effects for groundfish bycatch and sensitive habitat, since over 50% of the scallop fishing effort in the Georges Bank region

occurs in the sensitive Great South Channel area. In addition, substantial reductions in fishing effort is expected in the Mid-Atlantic region, reducing impacts on sea turtles and reducing mortality on small to medium scallops that are in abundance in many parts of this region.

The major issues from the proposed action include:

- Minimizing groundfish bycatch so that the proposed access program does not impact the rebuilding strategy or results from Amendment 13 management measures,
- Seasonal vs. year around access to the proposed areas, balancing the effects on groundfish vs. the needs of the scallop fishery (e.g. effects on markets, seasonal changes in meat yield, and safety)
- Establishing access area boundaries that minimize bycatch, while preserving the ability to access areas remaining closed unless they are classified as a habitat closed area to conserve EFH.
- The practicability of habitat closed areas if both plans continue to apply,
- Allowing access to a part of Closed Area I that has not been altered since 1994 by the use of mobile fishing gear

3.2 History Of FMP (Including Associated Amendments And Frameworks)

3.2.1 Scallop management

The Council began managing Atlantic Sea Scallop in 1982 when NMFS approved and implemented the Atlantic Sea Scallop Fishery Management Plan. Before that time, the fishery was loosely managed by various state fishery and health regulations, as well as an industry agreement that governed the length of trips and the number of days a vessel must remain in port between trips (i.e. “layover” days).

The Fishery Management Plan for Atlantic Sea Scallops, Placopecten magellanicus (Gmelin) initially implemented on May 15, 1982, included the following objectives:

- 1) To restore adult stock abundance and age distribution;
- 2) To increase yield per recruit for each stock;
- 3) To evaluate plan research, development and enforcement costs; and
- 4) To minimize adverse environmental impacts on sea scallops.

The management unit consists of the sea scallop 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). 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 management unit also includes populations found within the Gulf of Maine and Cape Cod Bay. These areas include the territorial seas throughout the range, primarily in ME and MA. Fishing for sea scallops within state territorial waters is not subject to regulation under the FMP except for vessels that do not hold a Federal scallop permit when scalloping in state waters. Nonetheless, populations within state waters are included within the management unit in recognition of market interactions and the need for complementary state management action.

Initially, the Scallop FMP regulated the fishery with an open access permit, a minimum average scallop meat count, and reporting or associated regulations to ensure compliance. These regulations were intended to maximize yield by preventing scallop vessels from landing small scallops, while maintaining a high degree of flexibility to determine when and where to fish.

In 1992 and 1993, the Council began evaluating new ways to achieve the FMP goals because catches declined quickly after the demise of the 1989 year class, because the industry found it more difficult to comply with the minimum meat count, and because mortality was too high to maximize yield. Amendment 4 introduced major changes in scallop management, including a limited access program to stop the influx of new vessels, a day-at-sea 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 a new annual framework adjustment process to improve the ability of the FMP to respond to variations and contingencies.

Vessels could qualify for either a full-time, part-time, or occasional limited access scallop permit, based on its scallop fishing history between 1985 and 1990. Initially capped at 403 permits (NEFMC 1993), the number of permits has declined to 280 permits in 1999 and has since increased to 310 permits in 2001 as catches improved. Thirty-five of these permits are inactive permits that used none of the 2001 day-at-sea allocations. Another forty-three permits were temporarily retired as a Confirmation of Permit History and not associated with an active fishing vessel.

Amendment 4 also established a planned reduction in the annual day-at-sea allocations for vessels with limited access scallop permits. In 1994, full-time vessels were authorized to fish no more than 204 days during the fishing year (March 1 to February 28/29). Vessels with part-time and occasional permits received 40 and 8.3 percent, respectively, of a full-time allocation. The day-at-sea allocation schedule gradually declined to 120 full-time days in 2000 where it was intended to remain, subject to annual adjustment to meet the Amendment 4 fishing mortality targets.

In 1998, the NMFS approved and implemented Amendment 7 to the Atlantic Sea Scallop FMP which was needed to change the overfishing definition and the day-at-sea schedule, meeting new lower mortality targets that were intended to comply with the Sustainable Fisheries Act and the new National Standard 1 guidelines. In addition, Amendment 7 also established two new scallop closed areas (Hudson Canyon and VA/NC Areas) in the Mid-Atlantic, following up on a previous interim action. These closures were intended to postpone mortality until March 1, 2001 when they would automatically re-open unless the Council took other action.

Amendment 7 changed the original annual day-at-sea allocation schedule. On one hand, Amendment 7 established further reductions in the day-at-sea allocations during a 10-year 'rebuilding' period. Once rebuilt, Amendment 7 estimated that the plan could annually allocate 60 full-time days per fishing year and keep mortality below the new maximum fishing mortality threshold, F_{max} . On the other hand, Amendment 7 also advanced for one year, the planned day-at-sea reduction for 2000 in Amendment 4. This postponement of the more substantial reduction to meet the new SFA mortality targets was meant to allow industry time to adjust to the new, more restrictive regulations and for the Council to consider ways to promote industry consolidation.

The day-at-sea estimates in Amendment 7 did not fully recognize the effects of closures on the ability for the plan to meet the new mortality objectives, however. Because of higher survival of sea scallops in closed areas, more scallops were subject to no fishing mortality compared to the proportion of the scallop resource that was open to fishing. Although fishing mortality remained above F_{max} in much of the open fishing areas, the plan could meet the annual mortality targets with more days than had been estimated by Amendment 7. New estimates in Framework Adjustments 12 (NEFMC 1999) and 14

(NEFMC 2001) indicated that the Amendment 7 fishing mortality targets could be met by allocating 120 days per fishing year to full-time vessels during 2000, 2001, and 2002.

Amendment 10 included a review of past management actions, including nine amendments and fifteen framework adjustments. The background for each amendment and framework adjustment is summarized in the Amendment 10 document (NEFMC 2003), but the Amendment 10 measures and historic framework actions that are relevant to the proposed action in this framework adjustment are summarized below. In additions, Table 1 and Table 3 include a list of amendments and framework actions, along with the dates of implementation and primary regulatory changes.

Table 1. Summary of amendments and Secretarial actions for the Atlantic Sea Scallop Fishery Management Plan.

Implementation date	Label	Primary regulatory changes
10/9/85	A1	40-meat count (scallop meats per pound) minimum average size (“meat count standard”)
7/22/88	A2	10% increase in the meat count standard during October through January; framework adjustment to the meat count standard during spawning
2/5/90	A3	Regional 12-hour time periods (windows) for off-loading sea scallops
1/19/94	A4	Limited access; days-at-sea reduction schedule and allocations; overfishing definition; elimination of overfishing on a seven-year schedule
1/14/97	A5	To implement measures to permit the Sea-stead scallop grow-out project
1/10/97	A6	Gear Conflict - allowed the Council to resolve gear conflicts in the sea scallop fishery through the framework adjustment process
4/3/98	IA	Interim action to close Hudson Canyon and Virginia Beach areas to protect small scallops
3/29/98	A7	Addressed SFA stock rebuilding requirements by establishing new management reference points and fishing mortality targets to achieve B_{MSY} on a continuing basis and the elimination of overfishing through DAS reductions. (120 DAS for full time vessels with further reductions planned to meet fishing mortality targets). Extension of Hudson Canyon and Virginia Beach areas to protect small scallops through March 1, 2001.
2/19/99	A8	Made upgrading and vessel replacement provision consistent with those in other New England and Mid-Atlantic FMPs.
4/21/99	A9	EFH – Addressed SFA requirements for designating Essential Fish Habitat
3/2/01	IA	Interim Action – requested by the Council to delay the opening of the Mid-Atlantic closed areas until controlled access to these areas could be implemented by Framework Adjustment 14.
3/3/04	EA	Emergency Action – allocates 4 full-time trips and 48 DAS for limited access scallop vessels to fish in the Hudson Canyon Area; raises the general category scallop possession limit in the Hudson Canyon Area from 100 to 400 lbs./trip. These regulations were consistent with those in Amendment 10.
Under review	A10	Introduces formal area rotation procedures; makes area-specific DAS allocations; establishes EFH closure areas that are consistent with Framework Adjustment 13 access boundaries; requires vessels to use 4-inch rings as of March 1, 2004 in controlled access areas and as of September 1, 2004 in all areas; requires 10-inch minimum twine top mesh in all areas; prohibits vessels with limited access scallop permits from fishing under general category rules for scallops while not on a DAS; expands the observer and scallop-related research set-asides to all areas; introduces a pro-active protected species program to address under the Magnuson Act authority interactions with scallop fishing gears; and strengthens the framework adjustment process.

Table 2. Annual full-time day-at-sea allocation schedules, active permits, landings, and landings per day-at-sea .

Fishing year	Amendment 4 ⁵		Amendment 7 ⁶		Frameworks	Active limited access permits ⁷	Days used ⁸	Days accumulated ⁹	Fishing mortality ¹⁰		Annual landings (million lbs.) ¹¹	Landings (lbs.) per day-at-sea
	Annual day-at-sea allocation	Fishing mortality target	Annual day-at-sea allocation	Fishing mortality target	Annual day-at-sea allocation				Georges Bank	Mid-Atlantic		
1990												
1991									1.51	1.31	37.5	
1992							44,934		1.11	1.54	31.0	689
1993							40,490		1.28	1.12	16.1	397
1994	204	1.69				358	36,747	36,747	0.34	1.20	16.6	452
1995	182	1.51				347	33,490	33,490	0.23	0.95	17.6	524
1996	182	1.51				326	34,404	34,404	0.19	1.12	17.2	501
1997	164	1.33				305	30,830	30,830	0.16	0.92	14.4	468
1998	142	1.15				292	27,089	27,089	0.05	0.69	13.0	478
1999	142	1.15	120	0.83	120	248	23,074	25,155	0.16	0.20	22.7	983
2000	120	0.97	51	0.34	120	272	24,958	27,492	0.07	0.34	32.7	1,309
2001	120	0.97	49	0.28	120	286	28,198	29,174	-	-	46.7	1,665
2002	120	0.97	46	0.24	120	300	30,065	30,314	-	-	53.0	1,764
2003	120		45	0.22	120	279	30,082 ¹²	30,276 ¹³	-	-	30.6 ¹⁴	1,906

⁵ Table 45 (NEFMC 1993)

⁶ Tables 4.2.1 and 4.2.7 (NEFMC 1998)

⁷ Summaries from NMFS permit data base records.

⁸ Includes days used by vessels with full-time, part-time, and occasional limited access permits. 1992 – 1997 (NEFMC 1999); 1998 – 2001 summaries from NMFS VMS and call in data.

⁹ Accumulated days differ from used days because of the extra days charged for trips to the Georges Bank groundfish closed areas and to the Hudson Canyon and VA/NC Areas.

¹⁰ Survey year fishing mortality rates: 1991 – 1998 (NEFSC 2001a), 1999 – 2000 PDT monitoring report, January 14, 2002.

¹¹ Annual landings 1991-1997 (NEFSC 2001); Fishing year landings 1998-2001 NMFS Fisheries Statistics Office (<http://www.nero.nmfs.gov/ro/fso/tac0502.pdf>)

¹² Projected based on March to July DAS use in 2003, compared to the seasonal DAS use pattern in 2002.

¹³ Assumes the same number of Hudson Canyon and VA/NC Area trips are taken. The scallop possession limit increased to 21,000 lbs. in the Hudson Canyon and VA/NC Areas, however.

¹⁴ Through July 2003.

Table 3. Summary of annual and in-season framework adjustments for the Atlantic Sea Scallop Fishery Management Plan

Implementation date	Label	Primary regulatory changes
7/19/94	FW1	Implementation of first-year effort controls on a full-year basis
11/21/94	FW2	State waters exemptions from gear restrictions
12/5/95	FW3	Elimination of vessel ownership requirement to retain limited access permit
4/5/95	FW4	Temporary adjustment (reduction to seven) in crew-size limit
6/29/95	FW5	Restrictions on the use of nets by dredge vessels and twine-top mesh size restrictions
7/10/95	FW6	Change to DAS demarcation line (DAS are counted when a vessel crossed this line)
3/5/96	FW7	Indefinite extension of (reduction to seven) crew-size limit
7/24/96	FW8	Further restrictions on the use of nets to catch sea scallops
8/14/97	FW9	Exemption from the 400-pound possession limit for state waters fisheries
8/28/98	FW10	Extension of measures needed for continuation of the Sea-stead scallop grow-out project
6/15/99	FW11	Scallop vessel access to Georges Bank Closed Area 2 (this action also included GF Framework 29)
3/1/00	FW12	Annual adjustment –DAS allocations adjusted to 120 for full-time; 48 for part-time & 10 for occasional vessels.
6/15/00	FW13	Scallop vessel access to Georges Bank Closed Areas with 10,000 pound trip limit and 10 DAS trade-off. Access for general category scallop vessels to the Nantucket Lightship Closed Area and Closed Area I was disapproved because of enforcement and administrative issues.
5/1/01	FW14	Annual adjustment – DAS allocations adjusted to 120 for full-time; 48 for part-time & 10 for occasional vessels; controlled access to Virginia Beach and Hudson Canyon areas; additional area closures
3/1/03	FW15	Annual adjustment - DAS allocations adjusted to 120 for full-time; 48 for part-time & 10 for occasional vessels; controlled access to Virginia Beach and Hudson Canyon areas

Amendment 5 to the Northeast Multispecies FMP in 1994 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. Except for the limited access program in Framework Adjustment 11 and 13 during 1999 and 2000, these areas remain closed to scallop fishing.

3.2.1.1 Framework Adjustment 11 (Controlled access in Closed Area II during 1999)

Framework Adjustment 11 allowed the first scallop fishing within the Georges Bank groundfish closed areas since 1994, when they were closed year around to all gears capable of catching groundfish. Scallop resource surveys and experimental fishing activities identified areas where scallop biomass was very high due to the zero fishing mortality during the intervening years. These surveys and experimental fisheries identified where the scallops occurred and allowed more precise estimates of total biomass as well as the distribution and amount of finfish bycatch.

These data allowed the Council to open the southern part of Closed Area II (south of 41°30' N latitude) to scallop fishing by vessels with limited access permits, under strict controls. The framework adjustment set a hard scallop and yellowtail flounder TAC, authorized limited access vessels to take up to three trips into the controlled access area, with a 10,000 lbs./trip scallop meat limit, a 10 DAS tradeoff, and a TAC set-aside program to fund and expand the amount of observer coverage for controlled access trips. Vessels were charged 10 DAS for each controlled access trip against the vessel's annual DAS allocation (120 DAS for a full-time vessel). The access area boundary was chosen by the Council to avoid fishing in the northern part of Closed Area II where bycatch was more probable and where more

sensitive habitat is found. The Council chose a June 15 opening date to avoid scallop fishing in Closed Area II during the spring when groundfish spawning activity is most intense. Scallop vessels were required to use dredges rather than trawls, and use minimum 10-inch twine top mesh, to minimize bycatch and bycatch mortality.

Due to the high scallop catches, trips often lasted less than five days (see Figure 1 in Appendix III), but fishing was attractive because the 10,000 lbs. of landings created more profits than the vessel could produce by fishing in open areas for 10 DAS. Every trip lasting fewer than 10 DAS therefore reduced the total effort and mortality on sea scallops because the vessel were charged more DAS than actually used. In addition, the catch rates greatly exceeded the vessel and crew's shucking capacity, so fishing time per DAS was also reduced. This shift in fishing effort from the open fishing areas was particularly effective in reducing fishing mortality on smaller scallops in the open fishing areas.

Out of the 280 vessels with limited access scallop permits, 187 vessels took trips into the access area during 1999. Initially, the framework adjustment authorized full-time scallop vessels to take up to three trips in the access area, with smaller allocations for part-time and occasional vessels. This allocation was made under the assumption that all permitted vessels would take all three trips, landing the scallop possession limit on each trip. In practice, not all vessels fished in the access area and vessels often landed less than authorized to avoid violations of the 10,000 lb. limit. This enabled the Regional Administrator to authorize three additional trips on October 1, 1999.

At the same time, NMFS was monitoring the yellowtail flounder bycatch through a combination of sea sampling and daily vessel reports. On November 2, 1999, NMFS determined that the scallop area access program was about to exceed the 387 mt yellowtail flounder quota and closed the fishery. All together, 187 vessels with limited access scallop permits took 644 trips and landed 6.0 million lbs. of scallop meats (64% of the scallop TAC).

3.2.1.2 Framework Adjustment 13 (Controlled access in the Nantucket Lightship Area, Closed Area I, and Closed Area II during 2000)

Building on the success and lessons learned with Framework Adjustment 11 controlled access in Closed Area II, the Council approved Framework Adjustment 13 which expanded the controlled access program to the Nantucket Lightship Area and Closed Area I. During the 1999 fishing year, surveys and experimental fishing activities demonstrated that total biomass of large scallops was also high in parts of the Nantucket Lightship Area and Closed Area I, as a result of the zero fishing mortality occurring there since 1994. The experimental fishing activities also demonstrated that groundfish bycatch would be low during the seasons that this research was conducted.

The Council developed boundaries for access during extensive evaluation of the effects on habitat, groundfish bycatch, and other fisheries (gear conflict). Based on analysis and extensive evaluation by the Council's groundfish, scallop, and habitat PDTs, Advisors, and Oversight Committees, the Council approved access to a NE corner of the Nantucket Lightship Area where scallop densities were highest and gear conflicts would be avoided. It also approved access to a central part of Closed Area I, where scallop densities were high and there was less concern about impacting more complex habitat to the south and avoiding gear conflicts in that same area.

Seasons to allow access were approved, taking into consideration bycatch and enforcement concerns. The approved seasons matched the times when the experimental fishery activities demonstrated that scallop fishing could occur there without high groundfish bycatch and to address enforcement concerns about monitoring compliance if all three areas are open simultaneously.

Framework Adjustment 13 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 NE corner of the Nantucket Lightship Area during August 15 to September 30, 2000; and two trips in the central part of Closed Area I during October 1, 2000 to January 31, 2001. Like the Framework Adjustment 11 area access program, each trip was charged 10 DAS and vessels could land up to 10,000 lbs./trip of scallop meats. Other than the expansion of the controlled access program, changes in scallop and yellowtail flounder TACs corresponding to new biomass estimates, and an increase in the regulated groundfish possession limit to 1,000 lbs./trip, the fishery regulations mirrored the ones from Framework Adjustment 11.

Unlike the experience in 1999, the daily scallop catches were a little lower in the controlled access areas and a little higher in the open fishing areas, particularly in the Mid-Atlantic region. Fewer vessels therefore fished and even though the yellowtail flounder catches did not meet the TAC, a lower percent of the scallop TACs were actually landed. One of the main issues was that the scallop possession limit/DAS tradeoff was not as profitable as it had in the previous year, especially when vessels risked losing all 10 DAS from their annual allocation even if the vessel returned to port early due to weather or emergencies.

When Closed Area II was open to scallop fishing, only 80 vessels with limited access permits took a total of 164 trips, landing 1.7 million lbs., or 26% of the scallop TAC. Similarly, only 136 vessels fished a trip in the Nantucket Lightship Area, landing 1.3 million lbs., or 24% of the scallop TAC. As expected the yellowtail flounder bycatch was very low, totaling only 16,000 lbs., compared to a 109,000 lb. yellowtail flounder quota. In Closed Area I, which opened on October 1, 2000, 135 vessels took trips landing 3.3 million lbs. of scallop meats, or 48% of the scallop TAC. The yellowtail flounder TAC for Closed Area I and Closed Area II were combined because both areas fall within the same yellowtail flounder stock. During both access programs, the yellowtail flounder bycatch totaled only 40% of the combined 1.6 million lb. quota.

Responding to logistical problems in the sea sampling program during 1999, NMFS trained more observers for the Framework Adjustment 13 access program. Because more observers were trained and fewer trips were taken than expected, the sampling frequency greatly exceeded the Council's 25% target. More importantly, the better trained observers collected data on a wide variety of species in the bycatch, compared to the prior year which data collection focused mainly on yellowtail flounder catches. This effort is important to the proposed action, because the data allowed in this document a better analysis and projection of bycatch for a wide variety of species.

3.2.1.3 Framework Adjustment 14 (Controlled access in the Hudson Canyon and VA/NC Areas during 2001 and 2002)

Framework Adjustment 14 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 retain and land 100 lbs. of scallop meats if they had fished in the Hudson Canyon and VA/NC Areas. Because the rapidly rebuilding scallop resource in the open areas was causing catches to rise, it was necessary to increase the scallop possession limit to attract effort in the area access program for the automatic 10 day-at-sea charge. Economic analysis indicated

that raising the scallop possession limit to 17,000 and 18,000 lbs. per trip could have insufficient economic incentives to fish in the Hudson Canyon and VA/NC Areas. During 2001, this appears to have been the case, since limited access scallop vessels took only 55 percent of the TAC, even though up to six trips had been authorized for authorized vessels¹⁵. Early indications are that fishing effort is likewise below expectations in the Hudson Canyon and VA/NC Areas during the 2002 fishing year, even though Framework Adjustment 14 increased the scallop possession limit to 18,000 lbs. per trip.

Although the Amendment 7 management objectives remained unchanged in the subsequent framework adjustments, concern was expressed about the cumulative effects of the proposed management actions in Frameworks 11 to 14 and consideration of new area closures would have significant effects. The actions proposed in Framework Adjustment 14 were also intended for a two-year period and included a permanent measure that would prohibit vessels from landing large amounts of shell stock and/or shucking sea scallops while off the day-at-sea clock. The Council therefore developed and took comment on a Supplemental Environmental Impact Statement (SEIS), which analyzed the cumulative effects of scallop management since Amendment 7 and the projected effects of the measures proposed in Framework Adjustment 14.

3.2.1.4 Framework Adjustment 15 (Controlled access in the Hudson Canyon and VA/NC Areas during 2003)

Framework Adjustment 15 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 lbs. per trip. This action was needed to achieve the objectives and fishing mortality target specified in Amendment 7, while the Council developed Amendment 10.

Until Amendment 10, the sea scallop fishery was governed primarily by day-at-sea allocations, crew limits, gear restrictions, and ad hoc area closures to achieve annual fishing mortality targets and achieve maximum sustainable yield (MSY). These efforts have been very successful, reducing fishing mortality and allowing biomass to recover nearly to the long-term targets well ahead of schedule. During the last seven years, the amount of fishing effort has declined from 45,000 days in 1992-1993 to 23,000 days in 2000-2001 (Table 2). At the same time, the number of limited access permits has declined from around 450 in 1994 to 340 in 2000. Only 276 of the 340 limited access permits used allocated days-at-sea in the 2000 fishing year. At the same time, age 2 and 3 scallops have become less vulnerable to the fishery because of gear restrictions, crew limits, and the Hudson Canyon and VA/NC Area closures. Overall fishing mortality on the Georges Bank stock has declined from 1.51 in 1991 to 0.15 in 1999 (NMFS 2001a), while biomass has increased from 1.30 kg/tow in the 1991 survey to 9.08 kg/tow in the 2000 survey (Table 4). For the Mid-Atlantic stock, fishing mortality has declined from 1.31 in 1991 to 0.43 in 1999 (NMFS 2001a), while biomass also increased from 0.99 kg/tow in the 1991 survey to 3.78 kg/tow in the 2000 survey (Table 5).

¹⁵ All vessels with a limited access scallop permit, even if the permit were converted from a Confirmation of Permit History during the year, were initially authorized to take three trips in the Hudson Canyon and VA/NC Areas. On October 1, 2001, the Regional Administrator authorized an additional three trips for vessels that fished in the area access program before September 1, 2001.

Table 4. Trends in landings, biomass, and fishing mortality for the Georges Bank scallop stock (NMFS 2001a and NMFS 2001b).

Calendar year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001 ¹⁶	2002
Landings (mt)	9,311	8,238	3,655	1,137	982	2,045	2,326	2,016	5,155	8,572 ₁₇	4,514	
Biomass (kg/tow)	1.30	1.65	0.53	0.46	0.80	1.51	1.50	3.72	3.53	3.67	8.92	~8.6 ¹⁸
Fishing mortality	1.51	1.11	1.28	0.34	0.23	0.19	0.16	0.05	0.14	0.18	0.07	

Table 5. Trends in landings, biomass, and fishing mortality for the Mid-Atlantic scallop stock (NMFS 2001a and NMFS 2001b).

Calendar year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001 ¹⁹	2002
Landings (mt)	7,011	4,955	2,778	5,872	6,318	4,999	2,910	2,948	4,653	6,579 ₂₀	15,533	
Biomass (kg/tow)	0.99	0.56	0.76	1.03	1.51	0.78	0.53	1.04	2.42	3.57	4.28	~4.3 ²¹
Fishing mortality	1.31	1.54	1.12	1.20	0.95	1.12	0.92	0.69	0.43	0.33	0.37	

3.2.1.5 Amendment 10

Amendment 10 was approved by the Council in September 2004 and the Final Amendment with a FSEIS were submitted to the Secretary of Commerce in December 2004. After reviewing the amendment, NMFS partially approved it on April 14, 2004²². NMFS published a proposed rule on February 26, 2004 and after responding to comments, published a final rule on June 23, 2004. Other than a few exceptions that become effective immediately, most rules go into effect on July 23, 2004. The rule requiring vessels to use 4-inch rings in dredges anywhere in the EEZ becomes effective on December 23, 2004 according to a six-month delay in implementation to allow the industry to adapt.

Among other measures, this major amendment introduces rotation area management and changes 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, the amended FMP allows for area-specific DAS allocations to achieve plan objectives and maximize yield. Vessels with area-specific DAS allocation must use them to fish in specific areas defined by the plan, or may exchange them with another vessel to fish in a more favorable (to the vessel) controlled access area. The amendment also adopts several alternatives to minimize impacts on EFH, including designating parts of the groundfish closed areas as EFH closed areas.

¹⁶ Fishing year 2001, ending February 28, based on preliminary statistics compiled by the NMFS NE Regional Office Fisheries Statistics Division and published at <http://www.nero.nmfs.gov/ro/fso/mul.htm>.

¹⁷ Preliminary estimate.

¹⁸ Preliminary estimate based on unaudited preliminary results from the 2002 scallop survey.

¹⁹ See footnote 8.

²⁰ Preliminary estimate.

²¹ Preliminary estimate based on unaudited preliminary results from the 2002 scallop survey.

²² Disapproved measures included the possession limit restriction on limited access scallop fishing vessels while not on a DAS, and the cooperative industry resource survey program.

The proposed management measures include the following:

- Changes and updates to the overfishing definition reference points and control rule, including assessing stock biomass for the entire resource, instead of three stock components (Mid-Atlantic, Georges Bank, and Gulf of Maine)
- Area specific DAS and trip allocations for limited access vessels, including one-to-one exchanges of controlled area access allocations, and changes to the carry over DAS and broken trip adjustment procedures
- A process for analyzing and implementing rotation area management closures
- A 4" minimum ring size requirement for scallop dredges used in any area beginning on September 1, 2004 and in any controlled access area upon implementation of the amendment
- A 10" minimum twine top mesh for all dredges used in any area
- Permit changes to prohibit limited access vessels from fishing for scallops when not on a scallop DAS
- Measures to minimize habitat impacts, including five new EFH closed areas within the boundaries of the groundfish mortality closed areas
- A proactive adjustment process to address interactions with protected species
- Changes to data collection, monitoring, and scallop research programs, providing for funding mechanisms and a cooperative industry survey to assist in rotation area management decision-making, and
- A revised framework adjustment process

Proposed measures that are relevant to this framework action include: area-specific DAS allocations and the EFH closed areas. As explained in Section 3.1, Amendment 10 anticipated treating some portions of the groundfish mortality closed areas as partially open to scallop fishing. In fact, the amendment analyzes the effects of access on scallop management, including different open area DAS allocations to achieve the FMP's annual fishing mortality goals, with and without access to the groundfish closed areas. This framework action would make DAS and trip allocations for limited access scallop vessels to fish in portions of the Nantucket Lightship Area, Closed Area I, and Closed Area II.

The Council originally approved Amendment 10 to the Sea Scallop FMP containing a dual DAS allocation strategy, one assuming that there would be access to the groundfish closed areas and one without. The dual strategy was necessary because, without access, higher open area DAS allocations would be needed to achieve the fishing mortality target that applies to the entire scallop resource. On the other hand, if Framework Adjustment 16 were not approved and the fishery could not work in the groundfish closed areas, part of the resource would experience zero fishing mortality, and it would take more DAS to achieve the resource wide fishing mortality target.

Since Framework Adjustment 16 was under development, Amendment 10 could not allocate the greater number of DAS and then reduce them mid-way through the fishing year when (and if) Framework Adjustment 16 is approved, in exchange for area access trip allocations. Instead, Amendment 10 allowed for an initial allocation of open area DAS during the 2004 fishing year, which would increase to a higher default by August 15, 2004 if Framework Adjustment 16 had not been approved. In such a circumstance, Amendment 10 assumed that either Georges Bank closed area access would be unapprovable, or a new framework would be considered in a later fishing year.

During the Amendment 10 review and approval process and the latter stages of Framework Adjustment 16 development, it became apparent that the framework adjustment would not allow area access to occur by the Amendment 10 deadline, and increasing the open area DAS allocation would either cause the FMP to exceed the fishing mortality target or complicate mid-season DAS reductions for open

fishing areas. To respond to this dilemma, the Council requested that NMFS postpone the default allocation date to September 15, 2004, a measure that NMFS approved and adopted in the final rule.

If the Framework Adjustment 16/39 area access program is approved and implemented by September 15, 2004, the open area DAS allocations for 2004 will remain as published in the final rule, i.e. 42 full-time DAS (an allocation that assumes access to the Georges Bank closed areas and a four-trip 2004 allocations for Hudson Canyon Area access). If approval and implementation of Framework Adjustment 16/39 is not possible by September 15, 2004, the framework adjustment may still be approved, but only vessels that used less than or equal to the initial 2004 allocations would be eligible to take Georges Bank closed area access trips (see Section 4.1.10.1.2). If a limited access scallop vessel took more than the initial 2004 allocations specified in Amendment 10, it would be able to fish the open areas up to the default 2004 open area allocations granted on September 15, 2004, but would be ineligible to take area access trips.

In all cases, if this framework adjustment allows access to Georges Bank closed areas with the associated allocations that the framework adjustment proposes, the 2005 and 2006 open area allocations will be adjusted to be consistent with Amendment 10 allocations that assume access (i.e. 40 full-time DAS in 2005 and 67 full-time DAS in 2007). According to the schedule determined in Amendment 10, the Council anticipates analyzing the fishery, assessing the resource, making new projections, and adjusting the DAS allocations for 2006 and subsequent years, as necessary.

The Amendment 10 DAS allocations were calculated from biological projections that used the 2002 survey data. During the development of this framework adjustment, the biomass estimates for the access areas under consideration (Sections 4.2.2.1 to 4.2.2.4) were re-estimated, using 2003 survey data and new survey data from the video survey conducted by the School of Marine Science and Technology (SMST) in New Bedford, MA. This changed the biomass projections for 2004 and subsequent years, particularly for Closed Area II, which had a large 2000 year class inside of it. According to the 2003 survey, the new biomass estimate for 2003 was about 40% less than that previously projected by Amendment 10. This new estimate caused the projected trip allocations to be less than previously estimated, without changing the fishing mortality targets for the areas that were set by Amendment 10. This new information, coupled with concerns over exceeding the yellowtail flounder bycatch TACs and habitat issues, caused the Council to adopt a modified area rotation schedule (see Section 4.1.10.1). As a result of the new biomass estimates and the modified rotation schedule, the area access program in this framework allows for a smaller total number of trips to be allocated than originally expected, without significantly altering the overall fishing mortality of scallops in the proposed access areas. Thus, the lower area access trip allocations do not signify that changes in open area DAS were warranted, nor were they included as an issue to be addressed by this framework adjustment.

In addition, the proposed EFH closed areas in Amendment 10 are now less practicable than they were originally analyzed to be, due to new EFH closed areas in Amendment 13 to the Multispecies FMP (see Section 3.2.3.2). Furthermore the area access program that Amendment 10 anticipated is in conflict with the Amendment 13 EFH closed areas (see Section 3.2.4), a problem that this framework adjustment addresses.

3.2.2 Overfishing definition

As indicated above, Amendment 10 changes and updates the biological reference points and the control rule in the overfishing definition. These changes are germane to the framework action, because the proposed area access requires adjustment to the open area DAS allocations to achieve the annual

fishing mortality target in the control rule. For this reason, the overfishing definition must be understood to evaluate the proposed framework action, and is repeated here for clarity.

Consistent with the status quo overfishing definition and applying risk adverse management principals in the National Standard 1 guidelines and managing the fishery as a unit, optimum yield is the annual amount of scallop biomass that may be landed to achieve the mortality target for the combined stocks. Total biomass and fishing mortality for the entire resource area, including scallops in closed areas, will be used for status determination with respect to the overfishing definition reference points. The value for the annual fishing mortality target is 80% of F_{max} . Day-at-sea and other allocations will be set to achieve this constant annual mortality target, unless the stock is overfished and being managed according to a rebuilding program. Specific management areas, e.g. controlled access areas, may have TACs based on fishing mortality rates that are above F_{max} however, provided that the resource wide average does not exceed F_{max} . The Council may however set other annual allocations below that which would cause overfishing to occur, in order to meet other plan objectives, stabilize yield or day-at-sea allocations, and/or maximize net benefits.

The Council may adjust the values of the biomass and fishing mortality targets and thresholds by framework or amendment, based on updated analysis or upon recommendation of the Stock Assessment Workshop.

The status quo overfishing definition, as revised by Amendment 10 says:

“If stock biomass is equal or greater than B_{max} as measured by the resource survey weight per tow index (currently estimated at 5.60 kg/tow for scallops in the Georges Bank and Mid-Atlantic resource areas), overfishing occurs when fishing mortality exceeds F_{max} , currently estimated as 0.24. 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 $\frac{1}{4}B_{max}$ ”

These reference points form the basis for the Amendment 7 control rule shown in Figure 1:

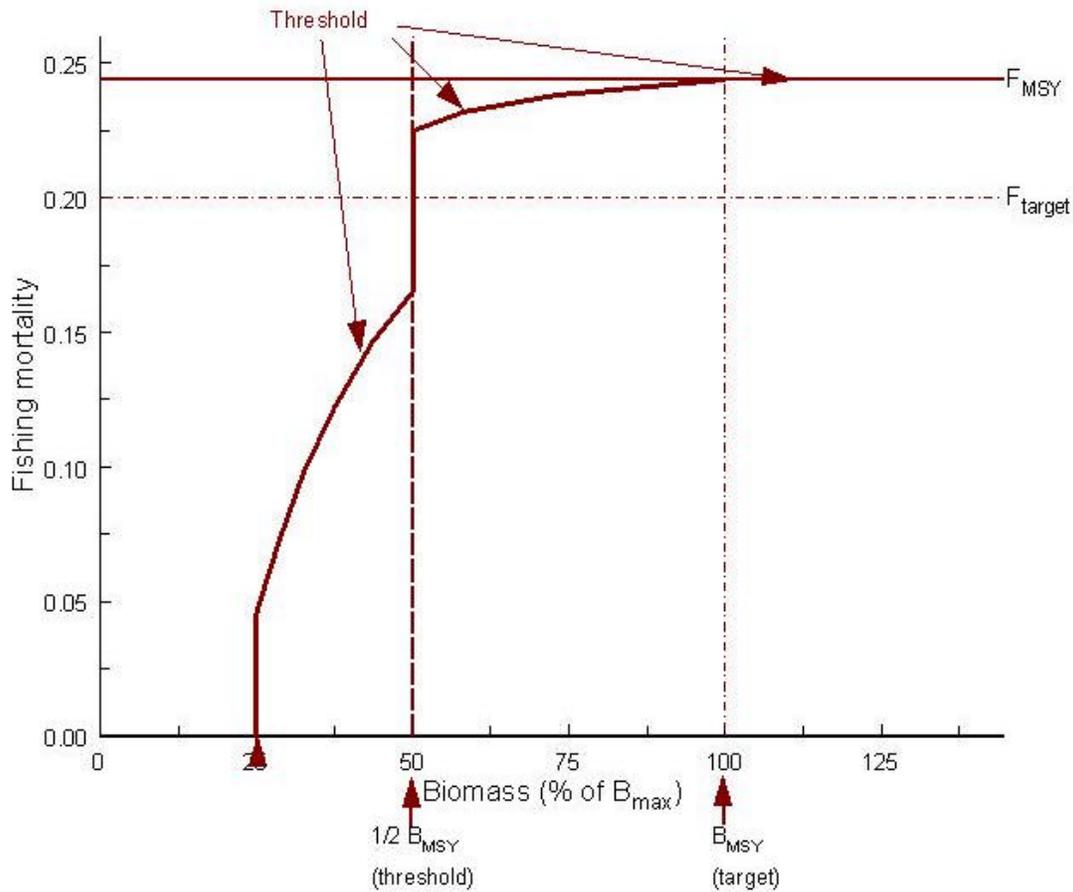


Figure 1. Existing overfishing definition control rule for sea scallops. Calculated threshold fishing mortality rates assume that the intrinsic rate of population growth is two times the value of F_{max} , then estimated to be $F=0.24$.

Specifications

Based on scientific recommendations of SAW 32 (NEFSC 2001b) and updated stratified mean recruitment indices for 1982-2002, the biomass and fishing mortality targets and thresholds in the table below will be used as the basis for setting allocations and making status determinations. The biomass target and threshold for the Gulf of Maine is unknown because there is no annual survey and insufficient data to determine a value.

Table 6. Revised specifications (values) for overfishing definition targets and thresholds.

Stock	Mid-Atlantic & Georges Bank	Gulf of Maine
Biomass target (B_{max} , kg/tow)	5.60	Unknown
Minimum biomass threshold (kg/tow)	2.80	Unknown
Fishing mortality threshold (F_{max})		0.24
Fishing mortality target		0.20

3.2.2.1 Rebuilding

According to the 2003 report to Congress (NMFS 2004), the sea scallop stocks are not experiencing fishing and are not in an overfished condition. Since the stock biomass exceeds the target, the report considers the sea scallop stocks to be fully rebuilt.

3.2.3 Groundfish management

3.2.3.1 Existing management measures

Amendment 5 to the NE Multispecies FMP expanded the size of Closed Area II to improve protection of cod and haddock spawning. This area and Closed Area I were closed to groundfish fishing from February to May, during the peak spawning activity. Amendment 6 was promulgated by the Secretary of Commerce, implementing haddock protection measures and extending the duration of the groundfish closed areas to January to June.

Amendment 7 and a preceding Emergency Action changed some groundfish areas from a seasonal closure to protect spawning to a year round closure to protect spawning and enhance rebuilding by reducing fishing mortality for cod, haddock, and yellowtail flounder. It also changed the boundaries of the Nantucket Lightship Area and included a new Western Gulf of Maine closed area. As a result of court order in the matter of Conservation Law Foundation et al. v. Donald Evans, additional management measures were implemented for fishing year 2002. These included changing a seasonal closure on Cashes Ledge into a year-round closure.

Since scallop fishing gears were capable of catching groundfish while fishing for sea scallops and occasionally targeted groundfish with dredges and beam trawls, the Council also prohibited scallop fishing in the closed groundfish areas. Scallop dredges are capable of catching groundfish and so the Multispecies FMP (50 CFR 648.80) generally restricts scallop fishing to vessels using a scallop DAS in the GOM/GB and Southern New England Regulated Mesh Areas. This requirement was not implemented in the Mid-Atlantic Regulated Mesh Area. The Multispecies FMP allows the use of gear that would otherwise be prohibited if fishing can be conducted without significant groundfish bycatch. Under this provision, the use of small scallop dredges has been authorized in certain areas while not using a scallop DAS. Prior to Amendment 13, the only areas where this fishing was allowed were the Mid-Atlantic RMA and the within the Small Mesh Northern Shrimp Fishery Exemption area in the Gulf of Maine. Amendment 13 (see below) would create a new exempted scallop fishing area in the waters offshore of Southern New England.

3.2.3.2 Amendment 13

The Secretary of Commerce partially approved Amendment 13 to the NE Multispecies FMP on March 18, 2004. This major amendment implements new rebuilding programs for overfished regulated species and will implement the following management measures:

- Changes in the DAS baseline for determining historical participation in the groundfish fishery
- DAS reductions from the baseline
- Creation of new categories of DAS and criteria for their allocation and use
- Changes in recreational minimum fish size and possession limits
- A new limited access handgear permit category
- Removal of the area restriction for the Northern Shrimp Fishery (the line defining this area will still be used for other management purposes, including the GOM scallop exemption area)
- Access to groundfish closed areas for tuna purse seiners
- An exemption program for Southern New England scallop dredge vessels
- Modifications to VMS requirements
- Changes to procedures for exempted fisheries
- Changes to the framework adjustment process
- Revised cod and yellowtail flounder trip limits
- Changes in gear restrictions, including minimum mesh and gillnet limits
- A DAS transfer program and a DAS leasing program
- Measures to implement the US/Canada Resource Sharing Understanding for Georges Bank cod, haddock, and yellowtail flounder
- A Closed Area II yellowtail flounder special access program (SAP)
- A winter flounder SAP
- Revisions to overfishing definitions and control rules
- Measures to protect EFH
- New reporting requirements
- Sector allocation procedures, and
- A Georges Bank cod hook gear sector allocation.

Management measures that are relevant to this framework action include the groundfish mortality closed areas, the new EFH closed areas, small mesh restrictions and exempted fisheries, and the yellowtail flounder SAP, and measures to implement the US/Canada Resource Sharing Understanding for Georges Bank cod, haddock, and yellowtail flounder. To achieve the fishing mortality goals and protect groundfish spawning activity, the Council retained the existing year around closed areas: Nantucket Lightship Area, Closed Area I, Closed Area II, Cashes Ledge, and the Western Gulf of Maine areas, which apply to all gears capable of catching groundfish and include scallop fishing gears.

3.2.3.3 Multispecies FMP Framework Adjustments

Framework Adjustments 11 and 13 for the Scallop FMP were also joint framework adjustments to the NE Multispecies FMP, because they allowed controlled access to the groundfish closed areas and required management measures to minimize groundfish bycatch. These framework adjustments are described in more detail in Section 3.2.1 and were designated as Framework Adjustments 29 and 34 to the NE Multispecies FMP, respectively.

3.2.4 Skate management

The Skate FMP became effective in September 2003. Since skates are primarily caught as bycatch in other fisheries, management actions in fisheries like multispecies, scallop, monkfish, and lobster could impact the overall mortality of skates. In addition to the conservation measures implemented through the Skate FMP, the FMP also identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. The FMP requires that if the Council initiates an action in another FMP that changes one or more of the baseline measures such that the change is likely to have an effect on the overall mortality for a species of skate in a formal rebuilding program, then a baseline review is required.

A baseline review must be initiated if one of seven categories of management measures are changed which have been identified as beneficial for skates. The seven categories of management measures identified in the Skate FMP are: (i) NE Multispecies year-round closed areas; (ii) NE Multispecies DAS restrictions; (iii) Gillnet gear restrictions; (iv) Lobster restricted gear areas; (v) Gear restrictions for small mesh fisheries; (vi) Monkfish DAS restrictions for monkfish only permit holders; and (vii) Scallop DAS restrictions (See Section 4.1.6 of the Skate FMP for more details). Since Framework 16/39 proposes to allow access for scallop vessels into portions of the groundfish mortality closed areas, the Skate PDT must evaluate the potential impacts of this change. Furthermore, since total allocated DAS is expected to slightly increase for limited access vessels, the Skate PDT must also evaluate whether more allocated DAS will impact skate mortality. The skate baseline review assessed whether limited access into portions of the groundfish mortality closed areas by the scallop fleet and slight increases in allocated DAS will have a greater impact on overall skate mortality as compared to the additional benefits of other area closures and effort reductions implemented in the action.

It is important to point out that the skate baseline review is only required for skate species that are currently in a formal rebuilding program. Of the seven skate species managed under the Northeast Skate Complex FMP, only two species are in a formal rebuilding program: thorny and barndoor. Therefore, the baseline review only evaluated the impacts of this framework action on the mortality rates of these two species. Section 7.1.4 details the skate baseline review conducted by the Skate PDT.

3.2.5 EFH management

In 1996, the Sustainable Fisheries Act (SFA) amended the Magnuson-Stevens Fishery Conservation and Management Act, and specific provisions were included in this amendment to emphasize the importance of essential fish habitat. To improve fish habitat the SFA requires or authorizes the Councils, NMFS, and other Federal agencies to take new actions to describe and identify EFH, minimize to the extent practicable adverse effects on EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of EFH. The New England Council implemented the EFH Omnibus Amendment in 1999 to comply with these requirements.

NMFS issued a final rule to revise the regulations implementing the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act on January 17, 2002 (EFH Final Rule). This final rule established guidelines to assist the Councils in the description and identification of EFH, the identification of adverse effects to EFH, and the identification of actions required to conserve and enhance EFH. The Council is required to assess whether actions have adverse impacts on EFH, and if necessary to minimize to the extent practicable adverse effects of fishing. Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP are major actions that were determined to have significant impacts on fishery resources as well as fishing communities. It was determined that the gears used in these fisheries do impact the EFH of some species in the region that

have EFH vulnerable to bottom tending gears. Therefore these two documents identified several specific alternatives to minimize these impacts, to the extent practicable. Both Amendments propose to implement specific area closures for habitat, as well as effort reductions, and gear modifications to enhance EFH conservation.

Overall, the measures analyzed in both documents were similar. However, due to timing issues, one set of habitat closed area alternatives developed by an advisory panel group for the Multispecies FMP process, was too late to incorporate into the alternatives analyzed in Amendment 10 to the Scallop FMP. In Amendment 13, this alternative (Alternative 10b) was developed to protect EFH through long term closed areas, but at the same time recognize that access to primary fishing grounds is also important to maintain sustainable resources. Both existing mortality closures and proposed habitat closures were modified to develop one alternative that protects EFH efficiently. Modifications were suggested for different reasons based on information from advisors; for example, known spawning areas, substrate types, and historical fishing areas. The EFH analysis of this alternative showed that these areas protect more EFH per unit of area than most of the other alternatives analyzed in both Amendments.

Further analysis and re-evaluation of these areas is planned for a second omnibus essential fish habitat amendment, which the Council has initiated. Public hearings began in March 2004, and the Amendment is expected to be completed in 2007. This EFH Omnibus Amendment will comply with NMFS's published guidelines to review and revise EFH components of FMPs every five years, and to develop a comprehensive EFH management plan that will minimize the adverse effects of fishing on EFH that will apply to all Council-managed FMPs.

4.0 MANAGEMENT ALTERNATIVES

4.1 *Description of Proposed Action*

The Council proposes the following management measures, selected from the alternatives identified in Section 4.2 and analyzed in Section 6.0, as the final preferred action in this framework adjustment. These alternatives may be very similar to the alternatives in Section 4.2, but may have been modified slightly for clarification or fine-tuning, with some additional rationale why the Council chose the alternative as preferred.

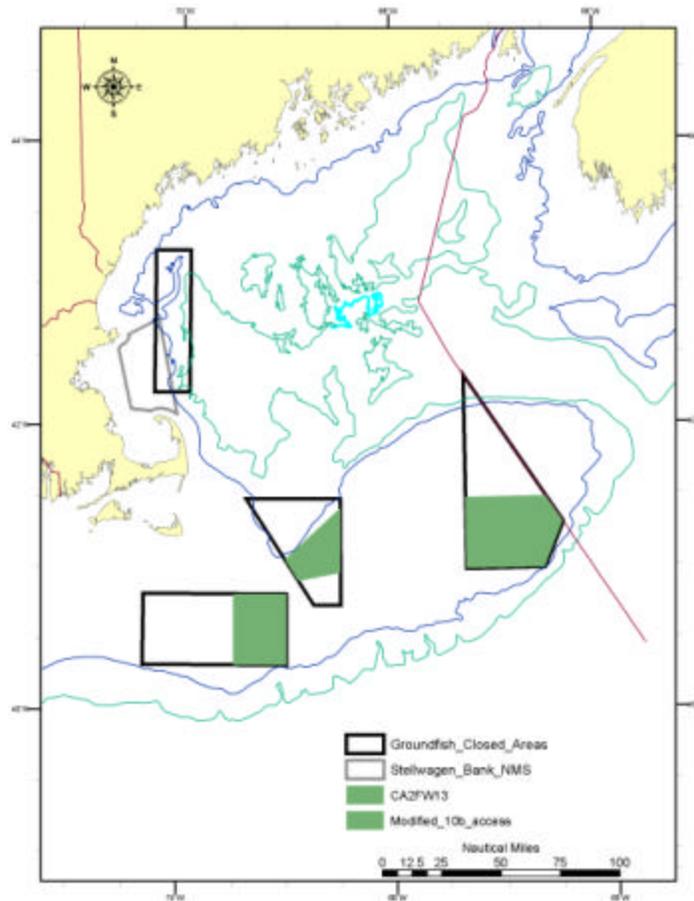
4.1.1 Area access consistent with the habitat closures described in Amendment 13 to the Multispecies FMP, with continued groundfish and scallop mortality closures in the western part of the Nantucket Lightship Area and the northern part of Closed Area I

(Framework Adjustment 39 to the Multispecies FMP)

This alternative is a change to the access boundaries contemplated in Amendment 10, and is the alternative described in Section 4.2.2.4.

The proposed action would allow periodic access to parts of the Nantucket Lightship Area, Closed Area I, and Closed Area II. The remaining inaccessible areas are either classified as habitat closure areas by the Multispecies FMP and the Scallop FMP (See Section 4.1.2, below), or would continue as a groundfish mortality closure where few large scallops presently exist. Periodic controlled access would occur in the eastern third of the Nantucket Lightship Area, in the areas south of 41°30' N latitude within Closed Area II, and in all parts of Closed Area I which are not classified as a habitat closure. A map of the access areas and coordinates are shown and described below.

The remaining parts of the Nantucket Lightship Area and Closed Area II which are not classified as a habitat closure (see Section 4.1.2) would continue as a groundfish mortality closure and may be opened to certain types of fishing in the future, when needed or when the groundfish mortality closure is no longer justified. Other parts of the groundfish closed areas were reclassified by Amendment 13 to the Multispecies FMP as EFH closed areas, which may contribute to groundfish mortality objectives and/or have other effects on scallop and other resources.



Map 1. Access areas (shaded) consistent with the habitat closures described in Amendment 13 to the Multispecies FMP, with groundfish and scallop mortality closures. Areas from left to right include the Nantucket Lightship Area, Closed Area I, and Closed Area II, with the Western Gulf of Maine area near the MA, NH, and ME coastlines, near the Stellwagen Bank Marine Sanctuary.

Table 7. Coordinates for access area boundaries.

Node	Nantucket Lightship Area		Closed Area I		Closed Area II	
	N latitude	W longitude	N latitude	W longitude	N latitude	W longitude
1	40°50'	69°30'	41°26'	68°30'	41°00'	67°20'
2	40°50'	69°00'	40°58'	68°30'	41°00'	66°35.8'
3	40°20'	69°00'	40°55'	68°53'	41°18.6'	66°24.8'
4	40°20'	69°30'	41°04.5'	69°01'	41°30'	66°34.8'
5	40°50'	69°30'	41°26'	68°30'	41°30'	67°20'
6					41°00'	67°20'

Rationale: The Council chose this alternative because it was compatible with the revised habitat closure areas (Section 4.1.2) and would keep the remaining portions of the areas inaccessible to

minimize groundfish bycatch and mortality, without significantly affecting the access to the scallop resource. Thus, the habitat conservation objectives would be met by making access compatible with the habitat closures in the Multispecies FMP, the bycatch objectives would be met by keeping parts of the areas inaccessible as a groundfish mortality closure, and the scallop objectives would be met by allowing access to more than 90% of the scallop biomass not in a habitat closure area.

The Council considered restricting access in the central part of Closed Area I, to reduce fishing pressure in areas that appear to have harder, complex bottom but are not in the Multispecies habitat closure areas. Such an action would also prevent opening new areas in Closed Area I to scallop fishing. This action would have been consistent with Alternative 3 (Section 4.2.2.3), but would reduce access to the Closed Area I scallop biomass by about 2/3rds. Similarly, the Council considered allowing access to the same areas that were open to fishing in the 2000 fishing year under Framework Adjustment 13. About 2/3rds of the scallop biomass in this access boundary was in the parts that overlapped the Multispecies FMP habitat closures areas and would require a revision to the Multispecies FMP to be practicable, which was impossible due to timing.

This alternative would continue the groundfish mortality closure areas where scallop biomass is low, but retain the ability to access those areas when and if conditions warrant such an action. At the present time, it does not make sense to open all areas that are not a habitat closure area, as would Alternative 2 (Section 4.2.2.2). Where scallop biomass is low, the anticipated benefits from fishing in areas with high scallop biomass would not occur. Instead, fishing would have the characteristics associated with fishing in depleted areas, increasing towing duration and the amount of fishing per DAS, causing potential increases in groundfish bycatch and bottom contact time. Instead, this alternative would focus scallop fishing in the most productive areas, minimizing bycatch while maximizing yield and benefits. Without having larger areas open for controlled access, the TACs (see table below) are nearly as high as the TACs for Alternative 2 (see Table 25) that would open up more area to scallop fishing.

Table 8. Target TACs for 2004 by access area based on R/V Albatross biomass projections, adjusted by SMAST video survey density estimates.

Access area	Target TAC @ F = 0.2	
	mt	Million lbs.
Nantucket Lightship Area	3,501	7.7
Closed Area I	1,236	2.7
Closed Area II	3,808	8.4
Total	8,545	18.8

4.1.2 Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP (Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

This alternative (see Section 4.2.3.2) would make the habitat closed areas in the Sea Scallop FMP consistent with those in the Multispecies FMP (see Map 7). This alternative was developed by the Council's advisory panels to incorporate areas that would benefit EFH, but not in the most productive fishing grounds currently available to fishermen. Both existing mortality closures and proposed habitat closures were modified to develop one alternative that protects EFH efficiently. Modifications were suggested for different reasons based on information from advisors; for example, known spawning areas,

substrate types, and historical fishing areas. Specific rationale for each modification is described in the description of this alternative in Amendment 13. Overall, the main intent of this alternative is to protect EFH through long term closed areas, but at the same time it recognizes that access to primary fishing grounds is also important to maintain sustainable resources.

Rationale : The Council chose this alternative to be compatible with the habitat closure areas in the Multispecies FMP, thus improving the practicability of those closures and eliminating the conflicts between the two FMPs. Further analysis and re-evaluation of these areas are planned for an omnibus essential fish habitat amendment that is in the early stages of development.

This alternative would make consistent the habitat closed areas in the Scallop and Multispecies FMPs. In doing this, costs associated with closure of larger areas to the scallop fishery are reduced while the habitat closed areas would receive protection from the adverse impacts of all bottom tending mobile gear. Currently, the habitat closed areas implemented in Amendment 10 are only closed to scallop gear while the habitat closed areas in Amendment 13 are closed to all bottom-tending mobile gears.

The Council chose these areas for habitat conservation in Amendment 13 to the Multispecies FMP, based on their practicability to conserve EFH while minimizing costs. New areas outside the groundfish closed areas would have very small impacts on the scallop fishery, while making some new areas in the groundfish closed areas available for controlled access if groundfish bycatch mortality can be managed appropriately.

4.1.3 Allow scallop fishing by limited access vessels using dredges only (Framework Adjustment 16 to the Atlantic Sea Scallop FMP and Framework Adjustment 39 to the Multispecies FMP)

The proposed action is the same approach and restrictions that were applied in the 2000 fishing year access program, under Framework Adjustment 13. For the final framework meeting, this alternative was described in Section 4.2.4.2.

Limited access scallop vessels that fish in the Nantucket Lightship Area, Closed Area I, or Closed Area II must use a scallop dredge that conforms to §648.51 (Gear and Crew Restrictions) and §648.2 (definition of “dredge or dredge gear”), including ring size, configuration and linkage, and maximum width. According to this regulation, the combined dredge width shall not exceed 31 feet (9.4 m). Also, the proposed regulations in §648.60 for a sea scallop area access program requires vessels to use 4” diameter or larger dredge rings when fishing in controlled access areas. Since this action would allow fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area under controlled access rules, both limited access and general category vessels would be required to use 4” diameter or larger dredge rings, regardless of when implementation of this action occurs. The use of scallop trawls would be prohibited.

Vessels with general category scallop permits that fish in the closed areas under Section 4.1.11 must also comply with these regulations, but the total width of the dredge may not exceed 10.5 feet (3.2 m). General category vessels must have no more than one dredge onboard during a closed area trip.

Rationale : Although this measure has the potential to limit fishing activity below intended levels in the Georges Bank controlled access areas and raise fishing costs for some scallop trawl vessels, the Council felt that the benefits for minimizing groundfish bycatch were well above the compliance and administrative costs. Alternatives exist for scallop trawl vessels (see below) to minimize those costs from being required to use dredges to fish in the Georges Bank controlled access areas. The possibility also

exists for scallop trawl vessels to use the allocated trips in the open fishing areas (while fishing with trawls) when and if the Georges Bank controlled access areas close due to unexpectedly high catches of yellowtail flounder.

High bycatch while using a scallop trawl (essentially a modified flatfish trawl) in the Georges Bank areas could prevent the FMP from achieving optimum yield, because the access program would probably close prematurely due to high yellowtail flounder catches.

Limited access vessels would otherwise be required to comply with the existing gear regulations that apply to any other scallop area when the vessel is in the day-at-sea program. Although vessels with a general category permit are limited to 400 lbs. per day or trip (whichever is greater), current regulations allow the use of dredges with a total width of 31 feet. The Council intended for the 4" ring requirement to be effective upon implementation of the area access program under area rotation. The Council's intent is consistent with the proposed regulations for Amendment 10.

Vessels that have trawl-authorized limited access permits have three options for the Georges Bank area access allocations:

1. **Trade the DAS for other areas where scallop trawls are allowed**. Vessels may trade Georges Bank access area trips for Hudson Canyon Area trips, where the Scallop FMP allows fishing with scallop trawls. Thus a vessel that uses dredges could end up with more trips than originally allocated to fish in the Georges Bank access areas, but fewer trips in the Hudson Canyon Area, and vice versa for scallop vessels that can only use trawls due to vessel and equipment limitations.
2. **Switch to using scallop dredges in the Georges Bank access areas**. This is a viable option for vessels that can be equipped for fishing with dredges. These vessels will be able to return to using scallop trawls elsewhere, after using dredges in the Georges Bank access areas.
3. **Do not utilize the Georges Bank access area allocations**. Many trawl-authorized scallop vessels fish in the Mid-Atlantic and do not fish in the New England area. Although more costly than before with Amendment 10's area-specific DAS allocations, the trawl-authorized vessels would be able to fish the number of days in Mid-Atlantic areas that are determined to produce optimum yield. In 2004, vessels that do not use Georges Bank controlled access allocations would be able to fish for 42 DAS in open areas and 48 DAS in the Hudson Canyon Area, totaling 90 DAS.

4.1.4 Finfish TACs and provisions to help avoid bycatch

The following proposed actions were selected by the Council from alternatives in Section 4.2.5. The proposed action includes the final framework meeting alternatives that were described in Sections 4.2.5.2, 4.2.5.3, and 4.2.5.4, respectively.

4.1.4.1 Hard TAC for yellowtail flounder bycatch, with a provision for vessels to transfer unused controlled access trips for fishing in open areas following area closures (Framework Adjustment 39 to the Multispecies FMP)

The controlled access scallop fishery in Closed Area I, Closed Area II, and the Nantucket Lightship Area will be limited to 10% of the target Southern New England yellowtail flounder TAC in the

Northeast Multispecies FMP and 10% of the quota established by the US/CA sharing agreement for Georges Bank yellowtail flounder. The target TAC for Georges Bank yellowtail flounder stock area is considered to be the same as the combined TAC in the US/CA sharing agreement, but the limit in the scallop controlled access fishery is 10% of the amount apportioned to the US.

For each yellowtail flounder stock area, controlled access to the applicable groundfish closed areas will close for the scallop fishing year when the estimated catches reach this 10% TAC limit (subject to the adjustment procedure described below). Yellowtail flounder, cod, and haddock catches in the controlled access scallop fishery will furthermore be monitored through dealer reports, vessel trip reports, observer data, daily reports, and/or any other data sources that the Regional Administrator deems applicable and will count against the annual quota set by the US/CA sharing agreement, but the catches in the scallop fishery will not affect other fisheries that take these species in the same year. Overages will be handled as specified in the Multispecies FMP and in accordance with the US/CA resource sharing agreement [cf. §648.85(a)(2)(ii)]. Similarly, the 10% TAC limit for the Southern New England yellowtail flounder stock area does not otherwise limit the allowable catches in other fisheries, but may affect the future size of the Southern New England yellowtail flounder stock biomass and future target TACs in the Multispecies FMP.

If the US catches reach 100% of the US/CA sharing agreement TAC apportioned to the US, adjustments will be made in accordance with §648.85(a)(3)(iv)(C)(3) and with Section 3.4.3 of Amendment 13 to the Multispecies FMP, i.e. “prohibit all vessels from harvesting, possessing, or landing yellowtail flounder from the U.S./Canada Management Area.” According to the final rule (cf. Federal Register, volume 69, no. 81 at page 22935), this regulation allows vessels to continue fishing in the US/CA sharing agreement area while not on a Groundfish DAS or when participating in a Special Access Program.

When the US/Canada sharing agreement TAC is reached for Georges Bank yellowtail flounder, a controlled access scallop fishery that is authorized within the Georges Bank yellowtail flounder stock area (e.g., the Closed Area II and Closed Area I controlled access areas²³) may therefore continue if the yellowtail flounder catch has not reached the 10% TAC limit applied to the controlled access scallop fishery (unless otherwise adjusted by the Regional Administrator as described below). Scallop vessels fishing in the US/Canada management area, including the controlled access scallop fishery may not, however, land yellowtail flounder. Once the 10% TAC limit for Georges Bank yellowtail flounder (as potentially adjusted by the Regional Administrator on or after December 1) is caught, the Closed Area II and the Closed Area I access areas (one or both, depending on which areas are open) would close to scallop fishing during that scallop fishing year. Even though a portion of the Closed Area I access area overlaps the Cape Cod and Southern New England yellowtail flounder stock areas, yellowtail flounder catches from Closed Area I will be counted against the 10% TAC limit for Georges Bank yellowtail flounder, but only catches of yellowtail flounder in Closed Area I from statistical areas 525 and 526 would count against the US/CA sharing agreement TAC. All yellowtail flounder catches from Closed Area II would count against the US/CA sharing agreement TAC for Georges Bank yellowtail flounder.

Similarly, landings of cod and haddock by scallop vessels fishing in the Eastern US/Canada Management Area would be prohibited if the TAC for those species is reached, but scallop vessels would not be prohibited from fishing in the area. Should US catches of yellowtail flounder, cod, and haddock exceed the US/CA sharing agreement TAC, TAC adjustments for these species will be necessary in subsequent years, consistent with the regulations for Northeast Multispecies.

²³ Although a portion

Changes to the US/CA sharing agreement TACs or the target TACs for Southern New England yellowtail flounder will automatically adjust the value of the 10% yellowtail flounder TAC limit that applies to the scallop controlled access program for the applicable yellowtail flounder stock area.

If the yellowtail flounder catches in the scallop controlled access program remain below the 10% TAC limit until Dec. 1 of each year, the following adjustment procedure will apply. In order to avoid closing the Georges Bank access programs when the scallop bycatch TAC is achieved but the total Georges Bank yellowtail flounder TAC is unlikely to be achieved by the end of the groundfish fishing year, the Regional Administrator may increase the Georges Bank yellowtail flounder bycatch TAC for the scallop access programs. The total catch (landings and discards by all vessels) of yellowtail flounder will be evaluated no earlier than December 1. If the Regional Administrator determines that it is unlikely that the total Georges Bank yellowtail flounder TAC will be taken by the end of the groundfish fishing year, the Regional Administrator can increase the scallop bycatch of Georges Bank yellowtail flounder. Any increase shall not exceed fifty percent of the difference between the projected catch and the total TAC, i.e. 50 percent of (Total TAC - Projected catch (combined scallop and groundfish)).

If the yellowtail flounder bycatch from the Closed Area I and Closed Area II scallop fishing meets the 10% TAC limit before December 1, the areas will close to scallop fishing. If the areas remain open to scallop fishing through December 1, or when the Regional Administrator determines that the yellowtail flounder TAC may be adjusted, the area would simply remain open until the new yellowtail flounder bycatch limit had been reached. Areas will not re-open to scallop fishing once they are closed under this alternative, even though an increase in the TAC might be justified.

The TAC for the Southern New England yellowtail flounder stock will not be adjusted, because the intent of the Council is for lower than expected catches to contribute to more rapid rebuilding and recovery from an overfished condition.

When a Georges Bank controlled access area closes, because the yellowtail flounder catch is estimated to meet the annual TAC, vessels with unused controlled access trips may take trips in open areas (not including the Hudson Canyon Area, controlled access areas, or other areas that are closed to scallop fishing) up to: 1) the difference between the number of trips taken in that area and the maximum number of trips allowed in that area for a limited access vessel, or 2) the difference between the open area allocations with access and the default Amendment 10 open area allocations without access, whichever is less. This transfer procedure applies to traded trips, as well as original allocations. If controlled access areas do not close to scallop fishing because of the yellowtail flounder TAC being reached, vessels may not transfer trips to the open areas.

For example, a vessel that has taken two of three controlled access trips, may fish for 12 additional DAS in the open areas (totaling $42+12=54$ DAS for the fishing year). In 2004, the DAS allocation for open areas without access is 62, meaning that any vessel can transfer no more than 20 DAS from a closed controlled access to open areas. So a vessel that has taken only one of three or has not yet fished in a closed controlled access area, may transfer no more than 20 DAS to the open areas, totaling 62 open area DAS for the fishing year. The table below provides the maximum number of controlled access days that may be transferred by limited access vessels.

Table 9. Maximum number of controlled access DAS that may be transferred to open fishing areas, due to early closure from bycatch meeting the TACs, derived from Table 8 in Amendment 10.

Amendment 10 allocation	Limited access category	2004	2005	2006 (default)
Open area DAS allocations without access	Full-time	62	117	152
	Part-time	25	47	61
	Occasional	5	10	13
Open area DAS allocations with access	Full-time	42	40	67
	Part-time	17	16	27
	Occasional	4	3	6
Maximum amount of unused controlled access DAS to be transferred	Full-time	20	77	85
	Part-time	8	31	34
	Occasional	1	7	7

Rationale and allocations: The Council wanted to ensure that yellowtail flounder catches do not exceed the TACs and comply with the US/Canada sharing agreement. A hard TAC was the best way to achieve this objective. A 10% limit seemed to be a fair allocation because it exceeded the historic share of landings and estimated discards in most years, except when vessels in the scallop fishery targeted yellowtail flounder when they were abundant. Also, the decision took into account the additional catches of yellowtail flounder outside of the controlled access areas.

Monitoring of Georges Bank yellowtail flounder catches will be required in all fisheries to adjust the 10% TAC limit that applies to the scallop controlled access program and to ensure compliance with the US/Canada sharing agreement. Other than the added monitoring for controlled access scallop trips, more reporting or monitoring requirements to adjust the TAC are unnecessary. The only thing that this provision requires is a reasonable catch projection for the fishing year, based on information already collected (for example see <http://www.nero.noaa.gov/ro/fso/usc/yellowtail.pdf>). Based on historic yellowtail flounder landings by month and expectations for a yellowtail flounder special access program season, the Council believes that a projection on or after December 1 would be possible.

In addition to the added monitoring and reporting requirements in this framework adjustment, existing measures in Amendment 13, if approved, will assure compliance with the US/Canada sharing agreement and monitoring of catches with respect to the TACs. These existing requirements include dealer landings reports, vessel trips reports, and higher levels of sea sampling that have been required by court order and are expected to continue after Amendment 13 implementation. Amendment 13 also grants the Regional Administrator the authority to make in-season adjustments to groundfish regulations to ensure that the US/CA sharing agreement TACs are not exceeded.

The TACs for yellowtail flounder catches in the scallop controlled access program would vary by year are identified in the table below. Although there are projections for Georges Bank yellowtail flounder biomass available, the biomass during 2004 – 2007 is expected to change very little if groundfish management achieves the expected fishing mortality targets and recruitment is as expected by the model. Additionally, the US/Canada sharing agreement TACs are specified annually and specifications for 2005 – 2007 are not yet available. Specification for the yellowtail flounder TACs are the same as the 2004 limit, and would automatically change when the US/Canada sharing agreement TAC is specified.

Table 10. TACs and projected catch estimates. TACs for Southern New England yellowtail flounder are from the catch projections in Multispecies FMP Amendment 13 and for Georges Bank yellowtail flounder from the Transboundary Monitoring Group Committee that establishes TACs under the joint sharing agreement with Canada. Estimated yellowtail flounder bycatch that exceeds the TACs are boldfaced.

Yellowtail flounder stock	Controlled access areas	Year	TAC (10% of US allocation) (mt)	Allocation to the controlled access fishery	Two-percent research set-aside	Expected yellowtail flounder catch (mt)
Southern New England	Nantucket Lightship Area	2004	70.7	69.3	1.4	74
		2005	198.2	194.2	4.0	0
		2006	332.5	325.9	6.7	308
		2007	611.8	599.6	12.2	378
Georges Bank	Closed Areas I & II (combined)	2004	600	588	12	906
		2005	600*	588	12	863
		2006	600*	588	12	26
		2007	600*	588	12	767

* To be updated annually according to the specification procedure associated with the US/Canada sharing agreement

The Council did not want to be overly conservative and as a result fail to achieve optimum yield in the scallop fishery. The Council therefore chose a more flexible option to adjust the Georges Bank yellowtail flounder TAC when appropriate (where it would not exceed the US TAC under the sharing agreement) and allow vessels to take unused controlled access trips in the open fishing areas elsewhere when and if the controlled access areas close from yellowtail flounder catches. This approach was deemed acceptable and achieved the annual mortality objectives under Amendment 10 – as long as the transferred allocations did not exceed the allowable limits that were established in Amendment 10 or as specified in future framework adjustments. Thus the impacts of the transfer had in effect been analyzed under the no access outcome included and approved in Amendment 10.

There is a possibility that the catch of yellowtail flounder, by all vessels, will not reach the target, or hard, TAC as determined by the groundfish plan. This is most likely for the TAC of Georges Bank yellowtail flounder, particularly if the Closed Area II groundfish SAP is not approved, or is not effective in increasing the harvest of yellowtail flounder. It would not make sense to limit scallop access to the closed area based on bycatch of yellowtail flounder if additional catches can be supported by the stock. The decision is delayed until the beginning of December, near the end of the Closed Area II SAP for groundfish vessels, in order to provide sufficient data with which to develop a reliable projection of the year's catch. In recent years, almost 40% of Georges Bank yellowtail flounder landings have occurred by the end of December. The limit on the increase to half of the difference between the projected catch and the total TAC provides a margin of safety should the projected catch under-estimate the actual catch. In addition, the yellowtail flounder SAP is projected to take up to 72% of the US/CA sharing agreement TAC and the season is from June 1 to December 31. Therefore, by the beginning of December, the Council anticipates that sufficient data on yellowtail flounder landings and catches will be available for the Regional Administrator to be able to determine whether the yellowtail flounder catches for the groundfish fishing year will reach the TAC and whether increases in the 10% TAC limit for the controlled access scallop fishery are therefore warranted.

In-season adjustments to the yellowtail flounder TACs to respond to the actual catches in other fisheries is not a risky approach for Georges Bank yellowtail flounder and in fact may improve the ability

for management to achieve optimum yield when the groundfish fishery catches are lower than anticipated. On the other hand, Southern New England yellowtail flounder are under a formal rebuilding program and adjusting the TACs under this circumstance does not seem to be prudent until the stock rebuilds.

This alternative would allow vessels to fish unused controlled access DAS in open areas, once a controlled access area closes because of the yellowtail flounder TAC. The yellowtail flounder TAC adjustment procedure therefore could only be effective if the areas remain open through December 1, because vessels will have already taken controlled access trips in open areas. Doing so and re-opening a controlled access area under these circumstances would be administratively complicated and would fail to account for the added yellowtail flounder mortality associated with these extra trips in the open scallop fishing areas.

The provision to take unused controlled access trips in open areas after an area closes due to yellowtail flounder catches relieves the burden on individual vessels that cannot take controlled access trips before areas are closed for the bycatch TAC, while allowing the FMP to achieve optimum yield, as structured by Amendment 10. At the same time, the limit on the number of trips that a vessel may transfer from closed controlled access to open areas prevents overfishing of the scallop stock(s) and prevents impacts from exceeding those analyzed for the no access allocations in Amendment 10.

4.1.4.2 Yellowtail flounder bycatch set-aside for research and research compensation (Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

Two percent of any yellowtail flounder bycatch 10% TAC limit would be set-aside to account for bycatch taken in the course of an approved research trip or trip approved to collect scallops to generate research funds in the closed areas. Yellowtail flounder bycatch on approved research and compensation trips would be monitored directly and reported by the research entity on research trips and extrapolated on compensation trips at the rate established for the commercial fishery through the observer program. Compensation trips could take place at any time during the approved scallop season so long as the yellowtail flounder bycatch TAC set-aside for research had not been exceeded.

Rationale and specifications : The Council chose this alternative to enable vessels to conduct approved scallop research or research compensation trips in the controlled access areas. The two percent set aside is the same amount as the scallop TAC set aside for research and carries the implicit assumption that the yellowtail flounder bycatch on research or compensation trips will be the same as those experienced during a regular controlled access scallop fishing trip. Without this alternative, however, it would be difficult for the NMFS to authorize research or compensation in the controlled access areas and conducted under a scallop TAC set-aside without an appropriate yellowtail flounder TAC set aside, also. Amendment 10 establishes a two-percent set-aside for conducting scallop and scallop related research or surveys. Based on current estimates of the yellowtail flounder TACs in the Multispecies FMP, the amount of allowable yellowtail flounder catch associated with two percent of the 10% TAC limit applicable to the controlled access scallop fishery are shown in Table 10.

4.1.4.3 Procedures to achieve voluntary actions to minimize bycatch (Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

In addition to the hard TACs for yellowtail flounder, access to real-time information and other procedures could help the industry to avoid bycatch of yellowtail flounder and other species, possibly

preventing early closure of the access program during the fishing year. The following efforts are expected to help achieve this goal and elicit voluntary cooperation:

1. Disseminate analysis of existing information about seasonal distributions of yellowtail flounder and other species in the access areas, based on previous surveys and sea sampling.
2. Alert vessel captains about “bycatch hotspots” in the access areas identified from real-time data collected by NMFS, via the VMS or other sources of communication. This information may be derived from sea sampling, vessel trip reports, or informal reports by scallop fishermen working in the access areas.
3. Work with industry to develop and publish information about best practices to reduce bycatch and bycatch mortality, such as reducing speeds before haul-backs and other ideas developed by the Advisory Committee, the PDT, or others.

No regulations on the fishery would be needed, but dissemination of existing information about geographic distributions of various finfish species and procedures that could help release fish before being brought onboard or ways to minimize bycatch mortality would need dissemination, either by NMFS or by the Council. In addition, it would encourage, but not bind, NMFS to summarize and disseminate information collected by observers and reported via vessel trip reports to be effective.

Rationale : Although not a regulation and although the Council cannot regulate NMFS through its amendments, the Council approved this alternative to encourage NMFS to disseminate summaries of collected data on bycatch, while the fishery is taking place. This measure is similar to other approved alternatives in previous actions to collect data on observed trips that was helpful in management decision-making.

Scallop fishermen will use this information to decide where and how to fish, potentially reducing bycatch and/or keeping the controlled access areas open to scallop fishing. These efforts, if successful, could have a positive effect on minimizing bycatch and improving net benefits, as was apparent when similar information was available for the Closed Area II access program in 1999 under Framework Adjustment 11.

4.1.5 Finfish possession limits

(Framework Adjustment 39 to the Multispecies FMP)

The following proposed actions were selected by the Council from alternatives in Section 4.2.6. The proposed action includes the final framework meeting alternatives that were described in Sections 4.2.6.2 and 4.2.6.4, respectively.

4.1.5.1 Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder

Scallop vessels on a controlled access trip for the Nantucket Lightship Area, Closed Area I, or Closed Area II would be allowed to retain and possess up to 1000 lbs./trip (453.6 kg) of regulated multispecies (including the 100 lbs. personal-use cod possession limit; see Section 4.1.5.2) provided that the vessel does not fish for, possess, or land haddock from January 1 through June 30 (subject to the seasonal restrictions for controlled access in Section 4.1.6) and provided the vessel has at least one standard tote on board. Combination vessels may not use a Multispecies DAS when fishing on a controlled access trip in the groundfish closed areas.

Furthermore, when fishing in the Nantucket Lightship Area on a scallop DAS on controlled access trips ending after March 1 or trips beginning before June 30 (subject to the seasonal restrictions for controlled access in Section 4.1.6), vessels would be allowed to retain and possess no more than 250 lbs./trip of yellowtail flounder. The yellowtail flounder would count against the 1000 lbs./trip limit described in the above paragraph.

Unless using approved gear for a monkfish DAS and fishing under a monkfish category C or D permit, scallop vessels fishing on a controlled access trips would be allowed to retain no more than 300 lbs. (136 kg) tail weight per DAS [996 lbs. (452 kg) whole weight per DAS]. DAS for determining possession limits are counted as actual time at sea, not the full 12 DAS for a controlled access trip²⁴.

All finfish possession limits and allowances are subject to the minimum size restrictions specified in the Multispecies and Monkfish FMPs.

Rationale: The Council recommended a temporary and limited increase in the groundfish possession limit, balancing the mandate to minimize bycatch (aka discards) while avoiding creating an incentive to target regulated multispecies. The predicted average bycatch is greater than 1,000 lbs. for trips to Closed Area II, but a higher limit could increase the incentive to target multispecies on a controlled access trip or reduce the incentive to avoid incidental catches of groundfish while targeting scallops.

Observed catches of regulated multispecies exceeded 300 lbs./trip in the 1999 and 2000 access programs. Furthermore, the catches of regulated multispecies are expected to be around 600 lbs./trip when Closed Area II is not open, and over 2,000 lbs./trip for trips in Closed Area II (primarily due to the expected catches of Georges Bank yellowtail flounder). These catches will, however, vary by season, location, and vessel. With a 300 lbs./trip possession limit in 1999, this forced vessels to discard otherwise legal fish, increasing bycatch. It may have also inflated the estimated yellowtail flounder catches, because some vessels may have been re-catching the dead discard from their own trip, or from other vessels operating in the vicinity.

Since controlled access trips are carefully monitored using catch reports and an enhanced level of observer coverage, and because scallop catches are high in the controlled access areas, this alternative would reduce bycatch without creating higher incentives for targeting regulated multispecies in the groundfish closed areas. This alternative would make the regulated multispecies possession limit the same as the amount approved for the 2000 fishing year under Framework Adjustment 13. During the 2000 fishing year, this measure appeared to reduce discards without harm to the groundfish resource.

4.1.5.2 Cod possession limit for personal use equal to 100 pounds per trip (per vessel) for personal use

Vessels on controlled access trips while fishing on a scallop DAS in the groundfish closed areas would be allowed to retain up to 100 lbs. per trip (per vessel) for personal use, including consumption on

²⁴ For all intents and purposes, fishing a monkfish DAS on a controlled access trip would be impractical since a standard scallop dredge and trawl are unlawful gears on a vessel fishing under a monkfish category C or D permit, although a scallop trawl with large monkfish mesh might theoretically be used to fish for monkfish (and very large scallops).

board the vessel or landing for non-commercial use. Retention of cod for personal use will count against the 1000 lb. regulated species possession limit in the section above.

Rationale : The Council wanted to carefully avoid allowing scallop vessels to catch and retain cod. On one hand, scallop vessels in previous access programs have caught very few cod and there was strong sentiment to ensure that this outcome continues. On the other hand, the Council did not want to force scallop fishermen to discard a few cod, nor did it want to create a situation that might lead to violations on a technicality (for example, a violation from having shore-purchased cod onboard or having a recently-caught cod on deck).

Scallop vessels infrequently catch legal size cod that rarely survive discarding when caught by dredges. While fishing in open areas, some vessels use the catch to feed the crew, or allow the crew to take some of the catch home. Continuation of this regulation and practice while fishing in the controlled access areas is unlikely to cause targeting of groundfish or increase groundfish mortality.

Also, vessels may have seafood products onboard for grub, which technically may be confused as filleted cod that were caught and cause a violation of a zero cod possession limit. This allowance would prevent this type of technical violation and permit the vessel to carry codfish fillets as grub.

4.1.6 Access season: June 15 to January 31

(Framework Adjustment 39 to the Multispecies FMP)

Same overall dates as those in Framework 13 in 2000 but with simultaneous access within a fishing year, all areas open June 15 to January 31

All access areas within the Nantucket Lightship Area, Closed Area I, and Closed Area II would open on June 15 of each year, provided that that area was slated for scallop fishing according to the rotation schedule in Section 4.1.10.1. The areas would remain open until January 31, unless the yellowtail flounder catches met the bycatch TACs for a stock area (Section 4.1.4.1). At the final framework meeting, the Council selected this action from the alternatives described in Section 4.2.7.2.

Rationale: The scallop fishing industry supported year around access to reduce the effect of concentrating landings in a shorter season (thereby affecting scallop prices) and forcing fishing to occur when scallops experience a decrease in meat yield due to spawning and during a period when hurricanes and nor'easters are more frequent. On the other hand, the analysis showed that with year around access more scallop fishing would occur during peak groundfish spawning activity and the projected finfish bycatch would not be valid during the spring. The analysis (see Section 6.2.5.1.3) was based on observed bycatch during the last scallop access program, occurring during June 15, 2000 to January 31, 2001.

Considering the costs and benefits, the Council did not feel that the benefits of year-round access outweighed the additional environmental risk due to potential effects on groundfish spawning and due to potential higher bycatch during months when bycatch levels could not be predicted based on existing data. That information may become available from future research or other fishing activities during the February through May period.

Area access was allowed during June 15 to January 31, during the 2000 fishing year under Framework Adjustment 13, and groundfish bycatch was below the thresholds set by the Council for the Framework Adjustment 13 access program. It appears that simultaneous access is manageable due to the ability to monitor scallop fishing activity via mandatory VMS on all vessels participating in the access program. Requiring scallop vessels to declare which area they intend to fish and requiring them to fish only that area during a trip bolsters this enforcement capability without taxing enforcement resources.

Furthermore, allowing simultaneous access spreads out fishing activity, reducing potential gear conflict, reducing the effects of scallop shucking from discarded shells and meats, reducing the potential for market gluts, and allowing fishermen more flexibility to maximize catch per effort while avoiding bycatch.

4.1.7 At-sea Observers

(Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

Existing sampling frequency (whatever can be funded) funded with a one percent TAC set-aside

The scallop TAC set-aside for observers would be one-percent, similar to the observer set-aside for other areas, allowing NMFS to provide more observer coverage because vessel owners pay for observers through the TAC set-aside. At the final framework meeting, the Council selected the alternative described in Section 4.2.8.3 for this action.

According to the analyses (see Section 4.2.8.1), a one-percent TAC (see Table 11) would provide about 9-28% coverage if the possession limit allowance on observed trips is set to compensate the vessel for the entire observer cost.

Vessels that carry an observer, placed on board by the Sea Sampling Observer Program as required by the NMFS, would be allocated additional scallops, in the form of a scallop possession limit exemption, to partially compensate the vessel and crew for the observer's daily cost. Vessels carrying observers would pay a daily rate to the observer contractor, but would be allowed to land more than 18,000 lbs. of scallops on a controlled access trip. Estimates of the amount of the allowance that would pay the vessel for the observer expenses are in Table 13, but NMFS may establish the amount based on other factors. This amount may be adjusted as appropriate, but would be the same amount in all controlled access areas during the same period of time.

Higher sampling frequency and better bycatch estimates can be achieved if the possession limit allowance does not cover the entire observer cost to the vessel. Higher sampling frequency, but no change in bycatch estimate precision can be achieved if not all vessels take controlled access trips.

Table 11. TAC set-aside specifications for compensating vessels for costs on observed trips.

Year	Access area	Total scallop TAC (mt)	One-percent set-aside		Minimum number of observed trips ²⁵
			(mt)	(lbs.)	
2004	Nantucket Lightship Area	3,501	35	77,184	71
	Closed Area II	3,808	38	83,952	64
2005	Closed Area I	1,471	15	32,430	23
	Closed Area II	3,492	35	76,985	57
2006	Closed Area I	1,281	13	28,241	20
	Nantucket Lightship Area	3,083	31	67,968	61
2007	Nantucket Lightship Area	2,582	26	56,923	52
	Closed Area II	3,136	31	69,137	55

Rationale : Analysis prepared for the final framework meeting (see Section 4.2.8.1 and 6.2.8) indicated that with a \$707 per day observer cost and the bycatch variability that the observer program saw in the 2000 controlled access program (Framework Adjustment 13), a one-percent set aside would be sufficient to achieve the target precision for yellowtail flounder bycatch estimates, a 30% CV. In fact, except when

²⁵ Based on the scallop landings allowances for observers, estimated in Table 13.

only one trip is allocated in a controlled access area, a one-percent TAC set aside is estimated to be sufficient to pay for the vessel's observer cost and achieve the 30% CV precision target. This alternative is calculated to provide equal or better bycatch estimate accuracy than is achieved through the available sampling frequency that NMFS can achieve for other fisheries (see Section 6.2.8) using available funding.

Table 12. Predicted sampling frequency, funded by the scallop TAC set-aside, needed to achieve a 20% and 30% CV on yellowtail flounder bycatch estimates, assuming NMFS-funded sea sampling program to achieve a 5% sampling frequency.

		Predicted precision					
		20% CV			30% CV		
Full-time trip allocation		1 trip	2 trips	3 trips	1 trip	2 trips	3 trips
Closed Area I	Target sampling frequency	14%	4%	1%	3%	0%	0%
Closed Area II	Target sampling frequency	5%	0%	0%	0%	0%	0%
Nantucket Lightship Area	Target sampling frequency	6%	7%	0%	0%	0%	0%
Combined	Minimum TAC set-aside	2%	1%	1%	1%	0%	0%

Accounting for expected average trip length, predicted average scallop prices, and the added time it would take a scallop crew to shuck and process the extra scallop landings to compensate for observer costs, the increase in the scallop possession limit for observed trips should be at least the amounts summarized in the table below. The estimated amounts vary by area and year because of differences in predicted catch rates and average scallop price.

Table 13. Predicted scallop landings allowance (lbs. meat weight) per trip, assuming a \$707 per day observer cost which would be fully compensated by scallop revenue. The analysis takes into account predicted LPUE, scallop price, trip duration to catch 18,000 lbs. of scallops, and the effect of the extra catch on trip duration.

	2004	2005	2006	2007
Closed Area I	-	1,429	1,392	-
Nantucket Lightship Area	1,085	-	1,115	1,088
Closed Area II	1,313	1,357	-	1,248

4.1.8 Enforcement Provisions

(Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

The following measures were incorporated from Framework Adjustment 13, to enable better administration and enforcement of the proposed access program and management measures. At the final framework meeting, these alternatives were described in Section 4.2.9.

4.1.8.1 Trip declaration and notification

An activity code will be incorporated into the VMS programming to indicate when a scallop vessel is on a closed area trip. A vessel may set an activation code for a closed area trip no more than the

number of trips authorized for fishing within the closed area (see Section 4.1.10.1). NMFS may trigger a closed area trip either when the vessel's VMS reports its first position within one of the closed areas or when notified by the existing VMS email capabilities that the vessel will be taking a closed area trip. To simplify administration and enhance monitoring, NMFS may require email notification of a closed area trip prior to leaving the dock. No additional notification is required at the end of a trip, before landing.

Rationale: Enforcement must know when a vessel is or is not authorized to fish in the groundfish closed areas. The activity code would enable law enforcement to quickly check if the vessel is authorized to be in the Nantucket Lightship Area, Closed Area I, or Closed Area II. Without the activation code or some other means of authorization, it would be impossible to distinguish between a vessel that had already taken its allocated closed area trips from one that had not, the latter being authorized to fish in a groundfish closed area.

4.1.8.2 Vessel operation and landing

Vessels on a closed area trip may not fish for any species except within the open portions of Nantucket Lightship Area, Closed Area I, or Closed Area II. Vessels fishing for scallops in one of the groundfish closed areas may not enter or re-enter another groundfish closed area, except to transit an area with gear stowed in accordance with §648.81(e) of the multispecies regulations governing closed area access. Partial unloading of the catch at more than one dealer is also prohibited.

Rationale: Circumvention of the scallop possession limit will significantly undermine the conservation goals of the proposed action. Allowing scallop fishing on closed area trips outside of closed areas would provide greater opportunity to transfer scallops at sea, thereby avoiding the scallop possession limit. The allocation of trips and the scallop possession limit are the primary management measures for controlling scallop catch and are intended to prevent the fishery from exceeding the scallop TAC.

Partial unloadings could also reduce the effectiveness of the scallop possession limit to keep landings below the TAC. Allowing landings of scallops at more than one dock or port would make it harder to track and monitor the landings from closed area trips.

4.1.8.3 More frequent polling of VMS equipment

Unless other controlled access programs already require semi-hourly or more frequent VMS polling, NMFS will increase the polling frequency for all limited access scallop vessels with VMS systems (regardless of whether the vessel fishes in the groundfish closed areas) to an average of twice per hour, from the current rate of one polling per hour²⁶. This enhanced polling frequency would begin on June 15, when the controlled access areas open for scallop fishing, and terminate when all three closed areas are no longer open for scallop fishing.

The increased polling frequency will also apply to all general category scallop vessels that apply for access to the closed areas (see Section 4.1.11). The increased polling frequency for these general category vessels would continue until the vessel no longer participates in the program, i.e. the end of the minimum of the 30-day declaration (see Section 4.1.11). The added costs associated with the increased messaging and associated administrative costs are to be borne by the scallop vessels with VMS systems.

²⁶ The polling frequency is also twice per hour when other controlled area access programs are in effect, such as the controlled area access program for the Hudson Canyon Area. Thus this measure would not increase the polling frequency, unless no other controlled access programs are effective.

Rationale: The increased polling frequency will enhance the monitoring capability to catch violators when fishing in the groundfish closed areas. Since the average would be a polling every 30 minutes, there would be a 50% chance of detection for entries into the closed areas of more than 15 minutes and a 100 percent chance of detection for entries into the closed areas for longer than 30 minutes. The Council believes this will be sufficient to catch violators that could be transferring scallops at sea to circumvent the scallop possession limit.

The original intent of the scallop VMS program was to determine when a vessel was at sea or at the dock, to be able to deduct the correct number of days-at-sea from a vessel's annual allocation. For this new purpose, more frequent polling is needed. It is also necessary to increase the polling frequency for scallop vessels that are not on a closed area trip, since the purpose of the provision is to prevent transfers at sea to other scallop vessels. It is not necessary to monitor non-scallop vessels, because it would be highly unusual for a vessel to be unloading 18,000 lbs. of scallops without a dredge onboard²⁷.

4.1.9 Special Reporting Requirements

(Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

The reporting requirements which are currently in effect for controlled access areas would continue, consistent with Amendment 10 regulations.

4.1.9.1 Vessel monitoring systems (VMS)

All scallop vessels that fish in the re-opened closed areas will be required to have a functional VMS onboard. In addition to the current VMS-based reporting requirements, the Regional Administrator may require vessels that fish for scallops in the closed areas to make daily reports on the haul weight of scallops, yellowtail flounder, and barndoor skates; the total number of tows since the last daily report; and the area fished. Daily reporting of scallops retained for landings and yellowtail flounder catches will be required to monitor the yellowtail flounder 10% TAC limit (see Section 4.1.4.1) and the US/CA sharing agreement TAC for Georges Bank yellowtail flounder. This daily report must be made via the e-mail messaging capability built into the VMS units.

Rationale : The additional reporting requirements are necessary for NMFS to monitor the fishery and make in-season adjustments to the trip allocations or discontinue the closed area scallop fishery. Currently all full and part-time vessels are required to have a VMS onboard, and all limited access vessels are required to have VMS when scallop fishing in the Hudson Canyon Area. Unlike previous actions where vessels had a choice of whether to use DAS in controlled access or open areas, vessels with occasional scallop permits would need to install and operate VMS to fish in the controlled access areas to use the controlled access allocations. Under Amendment 10 regulations, trading controlled access for open area DAS is not allowed.

4.1.10 Mechanical rotation strategy, fishing mortality targets, and allocations

(Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

4.1.10.1 Controlled access allocations for limited access vessels and TAC set-asides for research

²⁷ It is presently illegal for vessels that do not have a scallop limited access permit or are on a scallop DAS to land more than 400 lbs. per trip.

This alternative is an adjustment to the Georges Bank area rotation strategy that was initially developed in Amendment 10 and described in Section 4.2.11.2. The allocations for part-time and occasional vessels in Section 4.2.11.2 have been adjusted in accordance with a new allocation procedure described in Section 4.1.10.2.

An alternative mechanical rotation strategy would access the Nantucket Lightship Area and Closed Area II in 2004, with a three-year rotation cycle that would open access to scallops in two of three groundfish closed areas each year. In 2005, the Nantucket Lightship Area would close, while Closed Areas I and II would become accessible for scallop fishing. In 2006, Closed Area II would close, while the Nantucket Lightship Area and Closed Area I would become accessible. This three-year cycle would restart in 2007. The order of rotation and the target mortality rates are given in the table below.

Table 14. Fishing mortality targets for an alternative mechanical area rotation strategy, which maximizes benefits, based on 2003 survey data. $F=0.2$ is approximately the continuous (i.e. every year) fishing mortality that maximizes yield-per-recruit, or F_{max} .

Fishing year	Closed Area I	Closed Area II	Nantucket Lightship Area
2004	Closed	0.2	0.2
2005	0.2	0.2	Closed
2006	0.2	Closed	0.2
2007	Same as 2004	Same as 2004	Same as 2004

4.1.10.1.1 Adjustments to controlled area access trip and DAS allocations

TACs and effort allocations are shown and specified in Table 15, consistent with the area access boundary specified in Section 4.1.1. The existing controlled access allocations (currently for the Hudson Canyon Area only) would increase to the full-time, part-time, and occasional allocations shown in the last three columns in the table below, with a maximum number of trips that a limited access vessel may take shown in column 5 of the table below.

The allocations are calculated after applying a 5% TAC set aside [1% to fund observers (Section 4.1.7); 2% to fund research and cooperative scallop surveys (see Table 16); and 2% for general category fishing (Section 4.1.11)]; therefore, the allocations allow for the set-asides, and set-aside activities can occur without causing impacts greater than anticipated by this framework adjustment. Compensation for research costs must be done on trips taken to the access areas, but the research may be done in other areas or at a different time. Compensation for observers applies to observed trips taken in each access area. The general category TAC set-aside is to allocate trips for general category vessels in each access area, regardless of whether they are actually taken.

Part-time and occasional limited access allocations in the table below are consistent with the allocation procedure in Section 4.1.10.2. In 2004, however, part-time and occasional vessels may have already taken one trip to the Hudson Canyon Area, so this proposed action would not change the scallop possession limit for the one trip that a part-time and occasional vessel may fish in the Hudson Canyon Area. If the trip were taken in Closed Area II or the Nantucket Lightship Area, then the scallop possession limit would be 16,800 lbs. for a part-time vessel or 10,500 lbs. for an occasional vessel. In 2004, an occasional vessel would therefore receive no additional controlled access DAS because the total number of controlled access trips would be one, whether or not Closed Area II and the Nantucket Lightship Area are open for scallop fishing.

Table 15. TAC and allocation specifications, applying a 5% TAC set-aside²⁸, and an 18,000 lb. scallop possession limit for full-time vessels. These allocations are inclusive of the Hudson Canyon Area controlled access allocations. In 2004, the different possession limit for part-time and occasional vessels would apply only to trips in Closed Area II and the Nantucket Lightship Area, after which the scallop possession limits would apply in all controlled access areas.

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS; scallop possession limit)		
					Full-time	Part-time	Occasional
2004	Closed Area II	F = 0.2	3,808 (8.4)	2	7 trips (84 DAS; 18000 lbs.)	2 trips (22.4 DAS; 16,800 lbs.)	1 trip (7 DAS; 10,500 lbs.)
	Nantucket Lightship Area		3,501 (7.7)	1			or 1 trip (12 DAS; 18,000 lbs.)
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4		1 trip (12 DAS; 18,000 lbs.)	1 trip (12 DAS; 18,000 lbs.)
2005	Closed Area I	F = 0.2	1,471 (3.2)	1	5 trips (60 DAS; 18000 lbs.)	2 trips (24 DAS; 16,800 lbs.)	1 trip (5 DAS; 7,500 lbs.)
	Closed Area II		3,492 (7.7)	1			
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ²⁹	Closed Area I	F = 0.2	1,281 (2.8)	1	2 trips (24 DAS; 18000 lbs.)	1 trip (9.6 DAS; 14,400 lbs.)	1 trip (2 DAS; 3,000 lbs.)
	Nantucket Lightship Area		3,083 (6.8)	1			
2007	Closed Area II	F = 0.2	3,136 (6.9)	1	2 trips (24 DAS; 18000 lbs.)	1 trip (9.6 DAS; 14,400 lbs.)	1 trip (2 DAS; 3,000 lbs.)
	Nantucket Lightship Area		2,582 (5.7)	1			

²⁸ 1% for observers; 2% for research; 2% for general category fishing.

²⁹ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see

Table 43).

Table 16. Research TAC set-asides by access area and year for trips compensating vessels for participating them for the cost of scallop-related research and cooperative industry surveys.

Year	Access area	Total scallop TAC (mt)	Two-percent set-aside		Estimated research funding (US\$)
			(mt)	(lbs.)	
2004	Nantucket Lightship Area	3,501	70	154,368	602,034
	Closed Area II	3,808	76	167,904	654,826
2005	Closed Area I	1,471	29	64,860	236,090
	Closed Area II	3,492	70	153,971	560,454
2006	Closed Area I	1,281	26	56,482	209,550
	Nantucket Lightship Area	3,083	62	135,937	504,326
2007	Nantucket Lightship Area	2,582	52	113,847	433,756
	Closed Area II	3,136	63	138,274	526,824

4.1.10.1.2 Adjustments to open area DAS allocations

The open area DAS in the regulations will be adjusted if this framework action allows a vessel to fish in the access areas, described in Section 4.1.1. If the framework adjustment is implemented after the default trigger date that increases the full-time DAS allocation from 42 to 62 DAS, vessels that have used more than 42 DAS when this action is implemented will be prohibited from fishing in the proposed access areas (Closed Area II and the Nantucket Lightship Area) during 2004 and would be able to fish in the open areas up to the default allocations, shown in the table below. Once the area access allocations are made for vessels that have fished in the open areas for less than 42 DAS, vessels may not fish more than 42 DAS in open fishing areas during 2004. If access is approved in the 2004 fishing year, all vessels will receive the adjusted and area access allocations for 2005, according to the schedule in the table below.

The following table summarizes the open area DAS allocations if this action allows scallop fishing to occur in the access areas in Section 4.1.1. The DAS set-aside for funding observers and scallop-related research would also change, according to the specifications in Tables 19 and 21 in Amendment 10.

Table 17. Open area DAS adjustments to achieve the annual fishing mortality targets, consistent with Amendment 10 management measures (see Table 8 in Amendment 10).

Limited access permit category	2004 open area DAS allocations		2005 open area DAS allocations All limited access vessels	2006+ (default) DAS allocations All limited access vessels
	DAS allocation for vessels that fished less than or equal to 42 DAS	DAS allocation for vessels that fished more than 42 DAS		
Full-time	42	62	40	67
Part-time	17	25	16	27
Occasional	4	5	3	6

Rationale : The Council recommends changing the order of rotation and fishing mortality targets for controlled access, from those contemplated by Amendment 10. The analysis showed that resource conditions had changed and trip allocations would be more evenly distributed among years by changing the order of rotation. It also helped to resolve some problems by reducing the expected yellowtail flounder catches in any single year and closing access due to the hard TAC (Section 4.1.4.1). Total net benefits for this rotation strategy were slightly higher than the Amendment 10 rotation strategy.

Survey results for 2003, which were unavailable during the development of Final Amendment 10, indicated that scallop resource conditions in Closed Area II had changed. Biomass estimates from the 2003 surveys were about 40% less than projected by Amendment 10, using 2002 survey data. While some of the change could be attributed to sampling error in a random, stratified survey; the PDT determined that this was a significant change especially since the closed area is over-sampled by non-random survey tows. In addition, the surveys detected areas with anomalously high concentrations of predatory starfish.

Since the much larger biomass of scallops in Closed Area II appeared to be vulnerable to predation and they are expected to be nearly the same size meats as in the other two access areas (13.4 meats per pound, vs. 15.0 in Closed Area I and 10.2 in the Nantucket Lightship Area), the PDT thought that this warranted a shift in the preferred mechanical rotation strategy. Adding to the PDT recommendation, the Council considered the possible problem of resolving the conflicting habitat closure boundaries (see Section 4.2.3), the developing plan for a yellowtail flounder SAP in Closed Area II, and the potential problem with yellowtail flounder bycatch in the Nantucket Lightship Area with a 0.4 fishing mortality rate.

Furthermore, the lower Closed Area II biomass would provide lower TACs in 2005-2007 than Amendment 10 anticipated, thus out of balance with the expected landings in 2004. The alternative mechanical rotation strategy in this alternative is expected to even out the annual allocations and provide higher net benefits, while helping to keep yellowtail flounder mortality below acceptable levels (see Section 4.2.5).

According to the management measures in Amendment 10, the open area allocations depend on whether or not this framework action allows scallop vessels to fish in the groundfish closed areas. The regulations, however, could not presume access would be approved and the allocations in the proposed rule for Amendment 10 included the Amendment 10 allocations without access.

This action, furthermore, could not presume that the default DAS allocations without access would not increase on August 15, 2004 or a date before implementation of the Georges Bank access program. In this case, some vessels may have used more than the initial 42 DAS allocations, but less than the default 62 DAS allocation without access. Since it would be impossible to reduce the open area DAS allocations for vessels that fished more than 42 DAS before implementation, this action would allow vessels that fish more than 42 DAS on the date of implementation to retain the Amendment 10 allocation, but would be unable to fish in the Georges Bank controlled access areas during the 2004 fishing year. Since no vessel could fish more than 42 DAS plus the additional controlled access allocations in this action, or more than 62 DAS without fishing in the Georges Bank controlled access areas, the FMP would still be able to achieve the fishing mortality target in 2004.

4.1.10.2 Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)

This proposed action is a change to the Amendment 10 rotation strategy, which is described in Section 4.2.12.1. This section includes the specifications that are related to the choices in access boundaries (Section 4.1.1) and rotation strategy (Section 4.1.10.1).

Scallop possession limits would be adjusted, so that part-time vessels would receive controlled access DAS allocations that are exactly 40% of a full-time allocation, just as they did before Amendment 10. Similarly occasional vessels would receive 1/12th of a full-time allocation. Coincidentally, it also means that the maximum potential scallop landings on controlled access trips would have the same ratios.

Full-time scallop possession limits on controlled access trips would be 18,000 lbs./trip, but the scallop possession limit on part-time and occasional vessels would vary by year, according to the limits shown in Table 18. Except for the 2004 fishing year, these limits would apply in all controlled access areas, including the Hudson Canyon Area, the Nantucket Lightship Area, Closed Area I, and Closed Area II. Since the Hudson Canyon Area allocations have already been made in Amendment 10 and the preceding Emergency Action, the 2004 scallop possession limit for the Hudson Canyon Area would remain at 18,000 lbs./trip for all limited access vessels.

Due to the difference in scallop possession limits, limited access scallop vessels would be able to trade controlled access trips only with vessels having the same types of allocations. Full-time vessels would trade only with another full-time vessel, regardless of the type of permit (dredge, small dredge, or trawl authorized). Trades between part-time and occasional vessels would be similarly restricted.

Rationale: This alternative would correct a perceived inequity associated with controlled access allocations in Amendment 10 that could work against part-time vessels and favor occasional vessels. It would restore the allocation ratio to 40% and 1/12th of a full-time allocation, but require enforcement of scallop possession limits that differ by permit class.

Restricting trades between permit classes would be necessary to avoid an unenforceable situation. Under this alternative, part-time and occasional vessels could have scallop possession limits that are different than those for full-time vessels. While by itself this would not be a problem, it would otherwise require close tracking and monitoring of trips to ensure compliance with a scallop possession limit as originally assigned to another vessel in a different permit category. Thus a full-time vessel may, for example, have different scallop possession limits.

Table 18. Estimated total controlled access allocations for limited access scallop vessels, consistent with access boundary alternative 4 (Section 4.1.1), using an proposed new method for allocating controlled access trips and DAS to part-time and occasional limited access vessels which the DAS and potential scallop catch are 40% and 1/12th of the full-time allocations, respectively.

Year	Permit category	Alternative mechanical rotation; Alternative 4 access					
		Trips	DAS/trip	Scallop possession limit	Total controlled access DAS	Total potential scallop landings	Percent of full-time allocation
2004	Full-time	7	12	18,000	84	126,000	100%
	Part-time	3	11.2	16,800	33.6	50,400	40%
	Occasional	1	7.0	10,500	7	10,500	8.33%
2005	Full-time	5	12	18,000	60	90,000	100%
	Part-time	2	12.0	18,000	24	36,000	40%
	Occasional	1	5.0	7,500	5	7,500	8.33%
2006	Full-time	2	12	18,000	24	36,000	100%
	Part-time	1	9.6	14,400	9.6	14,400	40%
	Occasional	1	2.0	3,000	2	3,000	8.33%
2007	Full-time	2	12	18,000	24	36,000	100%
	Part-time	1	9.6	14,400	9.6	14,400	40%
	Occasional	1	2.0	3,000	2	3,000	8.33%

4.1.11 Access for vessels with general category scallop permits, with enhanced reporting and a TAC set-aside (Framework Adjustment 16 to the Atlantic Sea Scallop FMP)

At the final framework meeting, this proposed action was selected by the Council from the alternative described in Section 4.2.13.2. It has been updated and clarified below, including a calculation of the allocations available under the access boundary and mechanical rotation strategy alternatives that the Council chose for the final proposed action.

Vessels having general category scallop permits would be able to fish with a 10 ½ foot or less dredge for scallops in the access areas, subject to area specific limits on the number of trips by the fleet. Vessels with general category permits that fish in the access areas with dredges must comply with the regulations listed below. Vessels would be able to retain and land up to 400 lbs. of scallop meats or 50 US bushels of in-shell scallops, but would not be able to retain any regulated multispecies. Partial or full compensation for observer costs will be granted by increasing the scallop possession limit for a general category vessel to cover the observer cost. Trips may exceed one day in length, but the landings may not exceed 400 lbs., plus the observer allowance determined by the Regional Administrator, if applicable.

Vessels with general category scallop permits would be allowed to take trips with a 400 lb. scallop possession limit in the access areas where fishing is authorized for limited access vessels, until the total number of trips by the fleet equals the total number of authorized trips, specified in the table below. Trips by general category vessels will not be authorized in a controlled access area when the total number of general category trips in a fishing year would exceed the total number authorized, and when the areas close to scallop fishing because the total catch of yellowtail flounder by vessels using scallop dredges in an access area equal the hard TACs specified in Section 4.1.4.1.

Table 19. Two-percent set-aside for general category vessels to fish in Georges Bank controlled access areas and maximum amount of total trips that would be authorized, by area and year.

Year	Access area	Total scallop TAC (mt)	Two-percent set-aside		Total allowable trips for area
			(mt)	(lbs.)	
2004	Nantucket Lightship Area	3,501	70	154,368	386
	Closed Area II	3,808	76	167,904	420
2005	Closed Area I	1,471	29	64,860	162
	Closed Area II	3,492	70	153,971	385
2006	Closed Area I	1,281	26	56,482	141
	Nantucket Lightship Area	3,083	62	135,937	340
2007	Nantucket Lightship Area	2,582	52	113,847	285
	Closed Area II	3,136	63	138,274	346

The small mesh exemption regulations would be adjusted to allow this fishing activity as long as the fleet had not used all available trips. The number of trips will be calculated for each area, dividing two percent of its scallop TAC by 400 lbs. to determine the maximum number of trips that vessels can take in an access area during the scallop fishing year. Boundaries (Section 4.2.2) and seasons (Section 4.2.7) will be the same as those that apply to limited access vessels. Yellowtail flounder bycatch will be monitored by mandatory reports and observers and will count against the overall yellowtail flounder TACs for each stock area (Section 4.2.11).

The following requirements will also apply to vessels with general category permits when using dredges to target scallops in the access areas:

- VMS (Section 4.1.9.1)
- Zero groundfish possession limit
- Observers funded through the TAC set-aside (Section 4.1.7), with a target sampling frequency that applies to limited access scallop vessels.
- Trip declaration (Section 4.1.8.1)
- Reporting requirements (Section 4.1.9), including twice hourly position polling.

The existing gear restrictions in Amendment 10, pending approval, will also apply including a minimum 4" minimum rings size in area access programs, a maximum 10½ foot single dredge; and a minimum twine top mesh of 10-inches, square or diamond.

Rationale : Vessels with general category scallop permits are prevented from scallop fishing when an area closes to protect small scallops or for other fishery management reasons. Allowing these vessels to participate in the access programs would allow fishermen with general category permits to benefit from the results of the closure, like fishermen on limited access vessels. Equivalent reporting requirements and monitoring are needed to administer the proposed action and control mortality and impacts. A two-percent set-aside exceeds the scallop landings by vessels with general category permits during 1998 to 2002, which the Council therefore believes is an equitable or even generous allocation. A zero possession limit is needed because a proportionally equivalent groundfish possession limit (i.e. 400/18,000 x 1,000) would be an insignificant 22 lbs.

4.2 Considered and analyzed alternatives, including alternatives to the proposed action in Section 4.1

The impacts of the following alternatives were analyzed in Section 6.2 and presented at the final framework meeting on February 24, 2004. No alternatives were designated as preferred or non-preferred.

The Council selected from these alternatives to develop the proposed action (Section 4.1), choosing options and making modifications based on PDT advice, Advisory Committee recommendations, and public comment. In some cases, the alternatives were modified or combined based on the analyses and public comment. A final analysis of the proposed action was completed after the final framework meeting, based on the Council's choices, and the estimated impacts were described in Section 6.1. The following table is included to help the reader track the Council's selections from the alternatives described below, but the alternative may have been modified when it was included in the proposed action (Section 4.1).

Table 20. Proposed action cross-reference with alternatives that were considered and analyzed.

Action	Description, specification, and rationale in proposed action	Selected based on alternative in this section
Area access boundaries	Section 4.1.1	Section 4.2.2.4
EFH closed area boundaries	Section 4.1.2	Section 4.2.3.2
Gear restrictions	Section 4.1.3	Section 4.2.4.2
Finfish TACs and other bycatch measures	Section 4.1.4	Section 4.2.5.2, 4.2.5.3, 4.2.5.4
Finfish possession limits	Section 4.1.5	Section 4.2.6.2, 4.2.6.4
Access seasons	Section 4.1.6	Section 4.2.7.2
At-sea observer program	Section 4.1.7	Section 4.2.8.3
Enforcement provisions	Section 4.1.8	Section 4.2.9
Reporting requirements	Section 4.1.9	Section 4.2.10.1
Rotation strategy, mortality targets, and allocations	Section 4.1.10	Section 4.2.11.2, 4.2.12.2
General category measures	Section 4.1.11	Section 4.2.13.2

Finally, unlike Amendment 10, no status quo is described because this framework proposes scallop access to the Georges Bank closed areas under a new, mechanical rotation system. It does not continue a management program that was in place during the 2003 fishing year, when the proposed access areas were not open to scallop fishing. Some of the analyses in Section 6.0 may refer to status quo, which may either refer to the No Action alternative (i.e. allocations and management under Amendment 10 without access; Section 4.2.1) or to the status quo method of managing controlled access through scallop possession limits and DAS tradeoffs (as were applied to the Hudson Canyon and VA/NC Area access program in 2003).

4.2.1 No access for scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area (No Action)

No scallop fishing would occur in any part of Closed Area I, Closed Area II, or the Nantucket Lightship Area, for the foreseeable future. The default trigger in Amendment 10 would apply, increasing the open area DAS allocations for limited access vessels (see Table 21). Without access, the higher DAS allocations would be made on August 15, 2004 and at the beginning of the fishing year, thereafter.

Table 21. Alternative open area DAS allocations for limited access scallop vessels to achieve optimum yield.

Limited access permit	2004	2005	2006 (default)
Full-time	62	117	152
Part-time	25	47	61
Occasional	5	10	13

Rationale : In 1994, these areas were closed year around to all gears capable of catching regulated groundfish. In Amendment 13 to the Multispecies FMP, the Council has furthermore chosen parts of these areas as closures to protect essential fish habitat. Although Amendment 10 analyzes and provides scallop management projections assuming access to parts of the groundfish closed areas, there may be reasons why they must remain closed to scallop fishing, or access postponed beyond the scope of the framework. Such reasons include but are not limited to unacceptable amounts of groundfish bycatch that prevent the Multispecies FMP from achieving its objectives, unacceptable amounts of adverse effects on EFH, or conditions that prevent the scallop fishery from achieving optimum yield in the Scallop FMP. According to Amendment 10, without access to the groundfish closed areas, open area DAS must be higher in the open fishing areas to achieve the resource-wide fishing mortality target and achieve optimum yield.

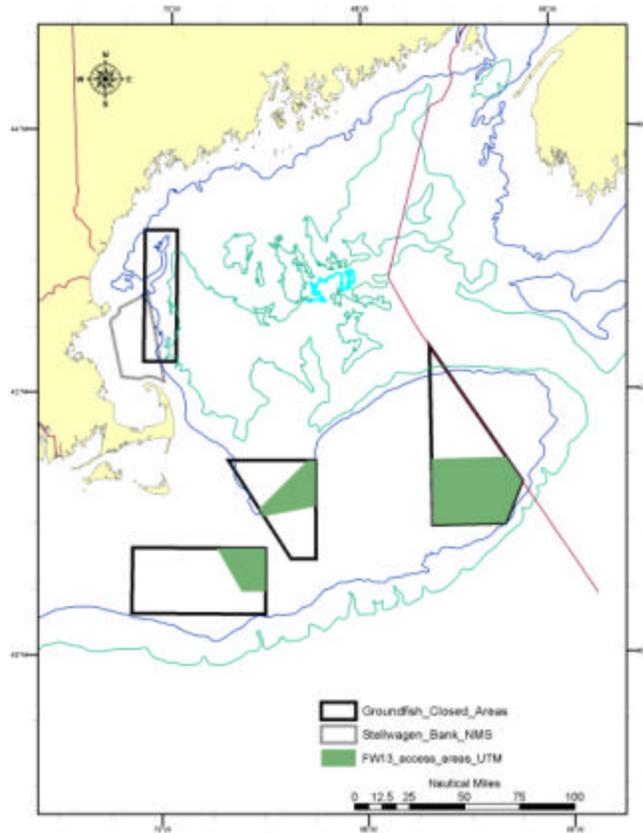
4.2.2 Area Access Boundaries

The Council considered four access boundary alternatives, related to the habitat closures that were proposed by Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP. The first two alternatives are the portions of the groundfish closed areas that do not overlap the habitat closure alternative in **each** FMP. The third alternative includes portions of the groundfish closed areas that do not overlap the habitat closures in **both** FMPs. The Council considered and analyzed a fourth alternative that may have the highest overall benefit (maximizing scallop yield, while minimizing groundfish bycatch), assuming that this framework adjustment also changes the habitat closure in the Scallop FMP (see Section 4.2.3).

TAC and controlled access trip/DAS allocation estimates are provided in Section 4.2.11, because they also depend on the mechanical rotation strategy that the Council chooses in this framework adjustment.

4.2.2.1 Alternative 1 – Access area boundaries consistent with the habitat closures described in Amendment 10 to the Sea Scallop FMP and Framework Adjustment 13 for access during 2000

This alternative would allow access to the areas contemplated in Amendment 10 and consistent with the habitat closures proposed in Amendment 10. A map of the areas and coordinates are show and described below.



Map 2. Framework 13/Amendment 10 access boundaries (shaded).

Table 22. Coordinates for access area boundaries.

Node	Nantucket Lightship Area		Closed Area I		Closed Area II	
	N latitude	W longitude	N latitude	W longitude	N latitude	W longitude
1	40°50'	69°00'	41°04.5'	West boundary of CAI	41°00'	67°20'
2	40°30'	69°00'	41°09'	East Boundary of CAI	41°00'	66°35.8'
3	40°30'	69°14.5'	41°30'	68°30'	41°18.6'	66°24.8'
4	40°50'	69°29'	41°30'	68°35'	41°30'	66°34.8'
5	40°50'	69°00'	41°08'	West boundary of CAI	41°30'	67°20'
6			41°04.5'	West boundary of CAI	41°00'	67°20'

Rationale: These access areas are the same as those where scallop fishing was allowed during the 2000 scallop fishing year, under Framework Adjustment 13. The boundaries were developed in the framework to encompass areas where scallop biomass was high, where groundfish bycatch was believed to be low during the access seasons, and where there would be minimal gear conflict. A major consideration was also that these areas avoided what were then thought to contain areas having complex hard bottom substrates, sensitive to adverse impacts by scallop fishing with dredges.

Since these areas had been disturbed by dredge fishing and corresponded to very productive scallop population distributions, the Council proposed habitat closures (see Section 4.2.3.1) that re-designated other parts of the groundfish mortality closures as closures to protect habitat.

Thus, this alternative would re-new access to areas that had already been disturbed by fishing and would be consistent with the habitat conservation decisions the Council made when approving Amendment 10. They also provide access to a large portion of the scallops that exist in the groundfish areas during 2004, as evidenced by the estimated TACs in the table below. Taking into account growth and mortality while fishing is occurring, total projected swept area biomass is about 5.8 times the TACs with an F=0.2 target, and about 3.2 times the TACs with an F=0.4 target.

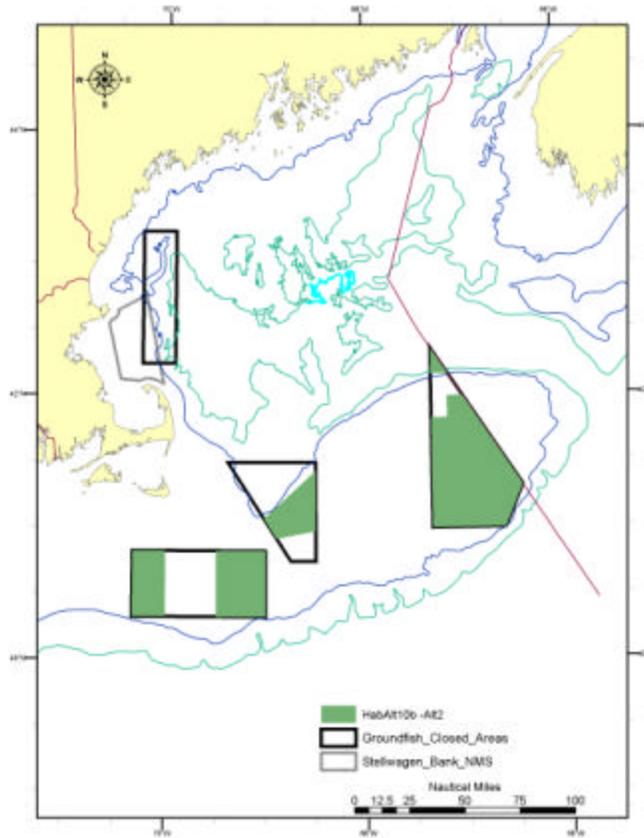
The TACs associated with the mechanical rotation options and allocations are given in Table 39 and Table 45.

Table 23. Target TACs for 2004 by access area based on R/V Albatross biomass projections, adjusted by SMAST video survey density estimates.

Access area	Target TAC @ F = 0.2		Target TAC @ F = 0.4	
	mt	Million lbs.	mt	Million lbs.
Nantucket Lightship Area	3,371	7.4	6,151	13.6
Closed Area I	1,170	2.6	2,131	4.7
Closed Area II	3,808	8.4	6,937	15.3
Total	8,349	18.4	15,219	33.6

4.2.2.2 Alternative 2 - Access area boundaries consistent with the habitat closures described in Amendment 13 to the Multispecies FMP

This alternative would allow access to the portions of the groundfish closed areas that would not be designated as habitat closures in Multispecies FMP Amendment 13. A map of the areas and coordinates are show and described below.



Map 3. Access areas (shaded) consistent with the habitat closures described in Amendment 13 to the Multispecies FMP

Table 24. Coordinates for access area boundaries.

Node	Nantucket Lightship Area		Closed Area I		Closed Area II	
	N latitude	W longitude	N latitude	W longitude	N latitude	W longitude
1	40°50'	70°20'	41°26'	68°30'	42°22'	67°20' (Hague Line)
2	40°50'	70°00'	40°58'	68°30'	42°10'	67°09.3' (Hague Line)
3	40°20'	70°00'	40°55'	68°53'	42°10'	67°20'
4	40°20'	70°20'	41°04.5'	69°01'	42°00'	67°0.5' (Hague Line)
5	40°50'	69°30'			41°50'	67°10'
6	40°50'	69°00'			41°50'	67°20'
7	40°20'	69°00'			41°00'	67°20'
8	40°20'	69°30'			41°00'	66°35.8'
9	40°50'	69°30'			41°18.6'	66°24.8' (Hague Line)

Rationale: This alternative would create maximum access and flexibility for fishermen, subject to the constraints from habitat closures in Amendment 13 (see Section 4.2.3.2). The Council’s intent in this framework adjustment is to change the habitat closure boundaries that it adopted in the Scallop FMP Amendment 10, to make them consistent with those in the Multispecies FMP. This would require the Council to adopt the alternative described in Section 4.2.3.2.

In the Nantucket Lightship Area, the TACs for this alternative (Table 25) are slightly higher than those for the Amendment 10 access boundaries (Table 23), as are the TACs for Closed Area II. This is because the majority of the scallop biomass is in the areas that were fished in the 2000 scallop fishing year under Framework Adjustment 13. The proposed access boundaries for Closed Area I in this alternative are shifted to the south, compared with the areas fished in the 2000 scallop fishing year. There is a slight increase in the 2004 TAC under for this Closed Area I access boundary, compared to the Framework 13 area in Alternative 1.

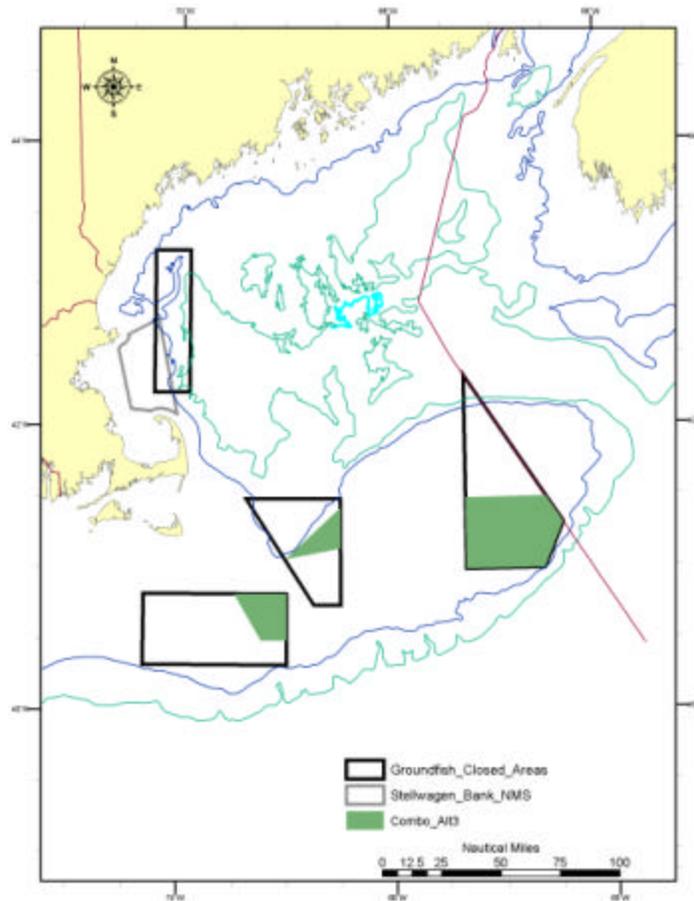
The TACs associated with the mechanical rotation options and allocations are given in Table 40 and Table 46.

Table 25. Target TACs for 2004 by access area based on R/V Albatross biomass projections, adjusted by SMAST video survey density estimates.

Access area	Target TAC @ F = 0.2		Target TAC @ F = 0.4	
	mt	Million lbs.	mt	Million lbs.
Nantucket Lightship Area	3,501	7.7	6,389	14.1
Closed Area I	1,236	2.7	2,251	5.0
Closed Area II	3,873	8.5	7,056	15.6
Total	8,610	19.0	15,696	34.6

4.2.2.3 Alternative 3 – Framework 13 access area boundaries consistent with habitat closures in both FMPs

This alternative would allow access to the portions of the groundfish closed areas that would not be designated as habitat closures in **both** Scallop FMP Amendment 10 and Multispecies FMP Amendment 13. A map of the areas and coordinates are show and described below.



Map 4. Framework 13 access area boundaries (shaded) consistent with habitat closures in both FMPs

Table 26. Coordinates for access area boundaries.

Node	Nantucket Lightship Area		Closed Area I		Closed Area II	
	N latitude	W longitude	N latitude	W longitude	N latitude	W longitude
1	40°50'	69°00'	41°26'	68°30'	41°00'	67°20'
2	40°30'	69°00'	41°09'	68°30'	41°00'	66°35.8'
3	40°30'	69°14.5'	41°04.5'	69°01'	41°18.6'	66°24.8'
4	40°50'	69°29'			41°30'	66°34.8'
5	40°50'	69°00'			41°30'	67°20'
6					41°00'	67°20'

Rationale: This alternative would create the largest possible access area if the Council does not adjust the habitat closure boundaries in the Scallop FMP by choosing the habitat alternative in Section 4.2.3.2, assuming NMFS approves the habitat closures in both amendments. Because scallop fishing gear would be prohibited in the habitat closures proposed by Amendment 10 and as a mobile bottom tending gear for

a Level III closure proposed by Amendment 13, the access would be restricted more than any other alternative.

The target TACs (see table below) for the Nantucket Lightship Area and Closed Area II would be unaffected relative to the boundaries in Alternative 1 (Section 4.2.2.1, Table 23), and slightly lower than those for the larger access areas in Alternative 2 (Section 4.2.2.2, Table 25). The smaller access area in Closed Area I, formed by the joint intersection of the habitat closures in both alternatives, cuts the 2004 TACs by about 2/3^{rds} relative to either Alternative 1 or 2 above.

The TACs associated with the mechanical rotation options and allocations are given in Table 41 and Table 47.

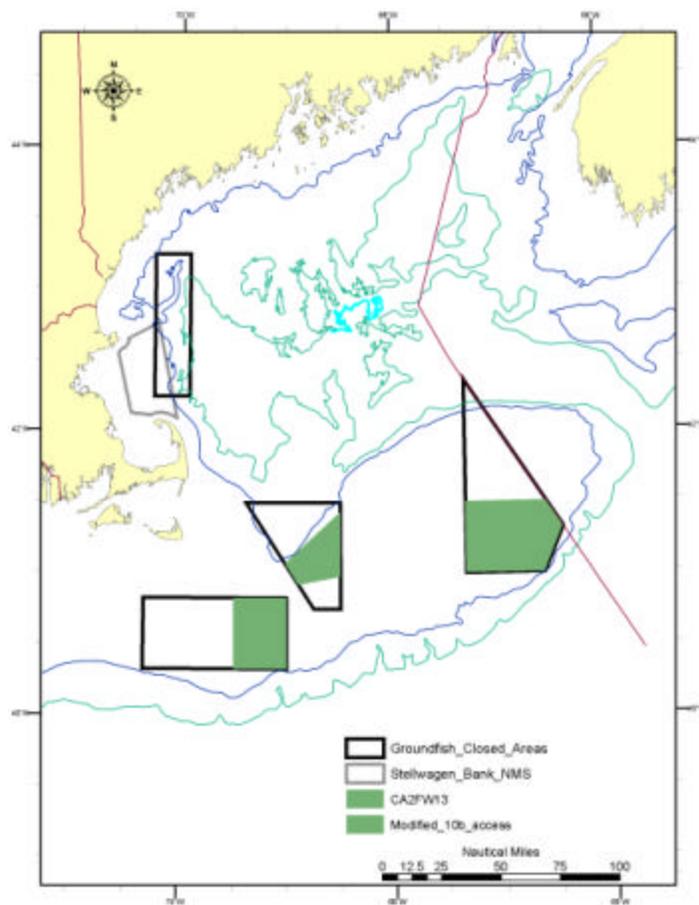
Table 27. Target TACs for 2004 by access area based on R/V Albatross biomass projections, adjusted by SMAST video survey density estimates.

Access area	Target TAC @ F = 0.2		Target TAC @ F = 0.4	
	mt	Million lbs.	mt	Million lbs.
Nantucket Lightship Area	3,371	7.4	6,151	13.6
Closed Area I	451	1.0	821	1.8
Closed Area II	3,808	8.4	6,937	15.3
Total	7,630	16.8	13,909	30.7

4.2.2.4 Alternative 4 – Area access consistent with the habitat closures described in Amendment 13 to the Multispecies FMP, with continued groundfish and scallop mortality closures in the western part of the Nantucket Lightship Area and the northern part of Closed Area I.

This alternative would allow scallop fishing and controlled access in a subset of areas described in Alternative 3 above. In the Nantucket Lightship Area, only the eastern third of Nantucket Lightship Area would be open to scallop fishing by this management adjustment. The western third of the Nantucket Lightship Area would continue as a groundfish mortality closure, which may be opened to certain types of fishing in the future, when needed, or when the groundfish mortality closure is no longer justified.

The access area in Closed Area I would be the same as in Alternative 2, consistent with the habitat closure in Multispecies FMP Amendment 13 (see Section 4.2.3.2). Scallop access in Closed Area II would be confined to areas south of 41°30' N latitude, the same as the area open to fishing during the 2000 scallop fishing year, under Framework Adjustment 13. The northern part of Closed Area II (excluding the HAPC) would continue as a groundfish mortality closure, which may be opened to certain types of fishing in the future, when needed, or when the groundfish mortality closure is no longer justified. A map of the access areas and coordinates are show and described below.



Map 5. Access areas (shaded) consistent with the habitat closures described in Amendment 13 to the Multispecies FMP, with groundfish and scallop mortality closures.

Table 28. Coordinates for access area boundaries.

Node	Nantucket Lightship Area		Closed Area I		Closed Area II	
	N latitude	W longitude	N latitude	W longitude	N latitude	W longitude
1	40°50'	69°30'	41°26'	68°30'	41°00'	67°20'
2	40°50'	69°00'	40°58'	68°30'	41°00'	66°35.8'
3	40°20'	69°00'	40°55'	68°53'	41°18.6'	66°24.8'
4	40°20'	69°30'	41°04.5'	69°01'	41°30'	66°34.8'
5	40°50'	69°30'	41°26'	68°30'	41°30'	67°20'
6					41°00'	67°20'

Rationale: This alternative would continue the groundfish mortality closure areas where scallop biomass is low, but retain the ability to access those areas when and if conditions warrant such an action. At the present time, it does not make sense to open all areas that are not a habitat closure area, as would Alternative 2 above. Where scallop biomass is low, the anticipated benefits from fishing in areas with

high scallop biomass would not occur. Instead, fishing would have the characteristics associated with fishing in depleted areas, increasing towing duration and the amount of fishing per DAS, causing potential increases in groundfish bycatch and bottom contact time.

Instead, this alternative would focus scallop fishing in the most productive areas, minimizing bycatch and bottom contact time, while maximizing yield and benefits. The TACs (see table below) are about the same as for Alternatives 1 and 2. There is a potential for gear conflicts in the southern part of the Nantucket Lightship Area access area, under this alternative, depending on when scallop fishing occurs. These concerns were raised during the consideration of scallop access alternatives for Framework Adjustment 13 in 1999.

Table 29. Target TACs for 2004 by access area based on R/V Albatross biomass projections, adjusted by SMAST video survey density estimates.

Access area	Target TAC @ F = 0.2		Target TAC @ F = 0.4	
	mt	Million lbs.	mt	Million lbs.
Nantucket Lightship Area	3,501	7.7	6,389	14.1
Closed Area I	1,236	2.7	2,251	5.0
Closed Area II	3,808	8.4	6,937	15.3
Total	8,545	18.8	15,577	34.3

4.2.3 Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on Essential Fish Habitat (EFH)

4.2.3.1 Habitat closed areas consistent with the Framework Adjustment 13 Scallop Closed Area access program (Approval of Amendment 10 only)

In this alternative, the year-round groundfish closed areas (Western Gulf of Maine Area, Closed Area I, Closed Area II, and the Nantucket Lightship Area) that were in place during the 2001 fishing year are considered habitat closed areas with the exception of those areas opened by Framework Adjustment 13 during the 2000 scallop fishing year (see Map 6). **Access alternative 1 (Section 4.2.2.1) is consistent with this habitat closure alternative.**

Rationale : These areas were chosen by the Council to protect EFH in Amendment 10 to the Sea Scallop FMP. The areas had been closed to all mobile -tending gear since 1994 and habitat in these areas would benefit from continued protection. Also, since they were already closed to scallop fishing to achieve conservation objectives for regulated groundfish, closure of these areas was deemed practicable due to the combined benefit for groundfish conservation, protection of recovering sensitive habitat in these areas, and the low cost associated to the scallop fishery while the areas were closed for groundfish conservation.

4.2.3.2 Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP

This alternative would make the habitat closed areas in the Sea Scallop FMP consistent with those in the Multispecies FMP (see Map 7). **Access alternatives 2 (Section 4.2.2.2) and 4 (Section 4.2.2.4) are consistent with this habitat closure alternative. Alternative 3 (Section 4.2.2.3) could also be implemented without overlap with the Alternative 10b habitat closed areas.**

This alternative was developed by the Council's advisory panels to incorporate areas that would benefit EFH, but not in the most productive fishing grounds currently available to fishermen. Both existing mortality closures and proposed habitat closures were modified to develop one alternative that protects EFH efficiently. Modifications were suggested for different reasons based on information from advisors; for example, known spawning areas, substrate types, and historical fishing areas. Specific rationale for each modification is described in the description of this alternative in Amendment 13. Overall, the main intent of this alternative is to protect EFH through long term closed areas, but at the same time it recognizes that access to primary fishing grounds is also important to maintain sustainable resources.

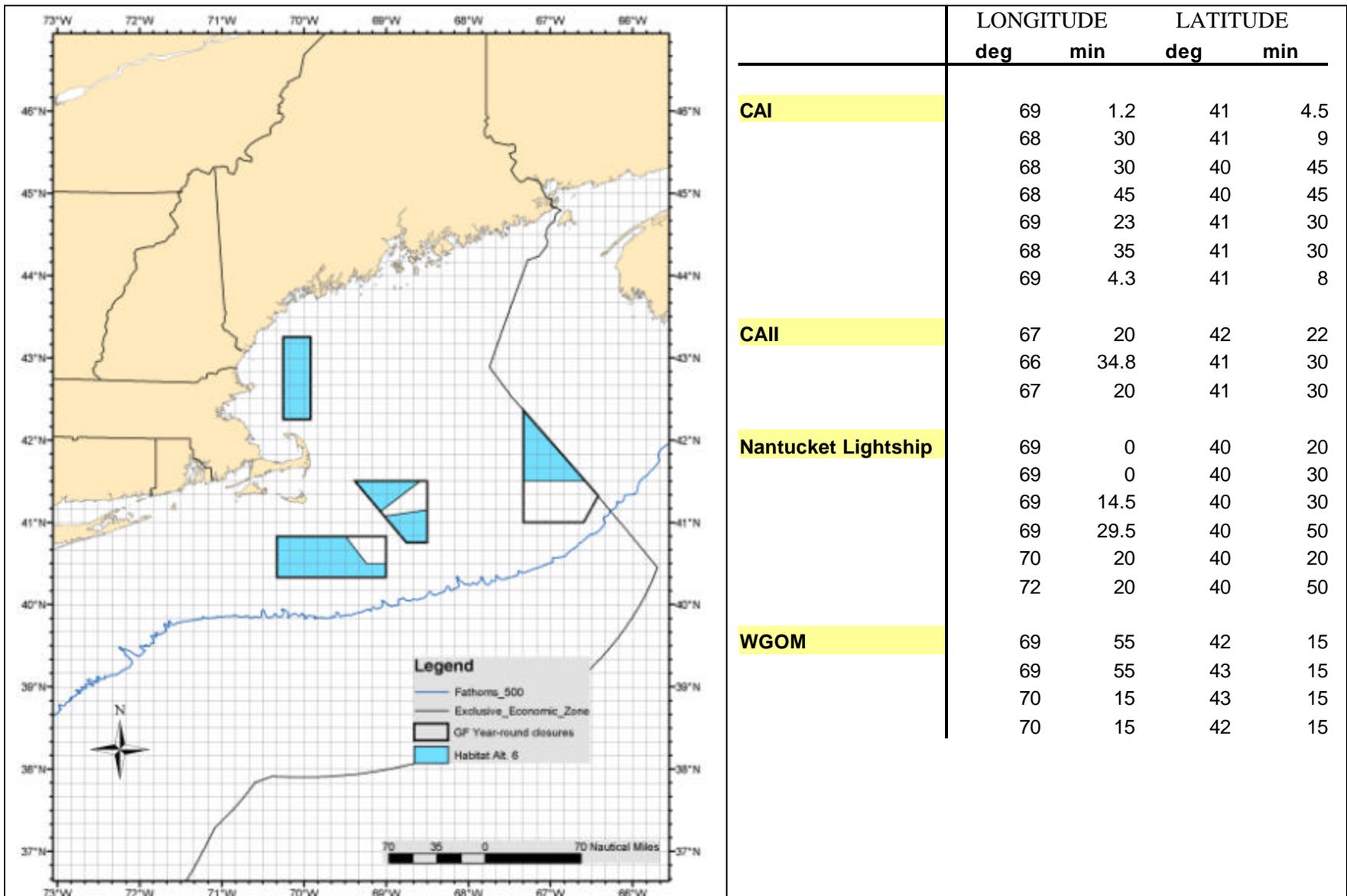
Rationale : This alternative would make consistent the habitat closed areas in the Scallop and Multispecies FMPs. In doing this, costs associated with closure of larger areas to the scallop fishery are reduced while the habitat closed areas would receive protection from the adverse impacts of all bottom tending mobile gear. Currently, the habitat closed areas implemented in Amendment 10 are only closed to scallop gear while the habitat closed areas in Amendment 13 are closed to all bottom-tending mobile gears.

The Council chose these areas for habitat conservation in Amendment 13 to the Multispecies FMP, based on their practicability to conserve EFH while minimizing costs. New areas outside the groundfish closed areas would have very small impacts on the scallop fishery, while making some new areas in the groundfish closed areas available for controlled access if groundfish bycatch mortality can be managed appropriately.

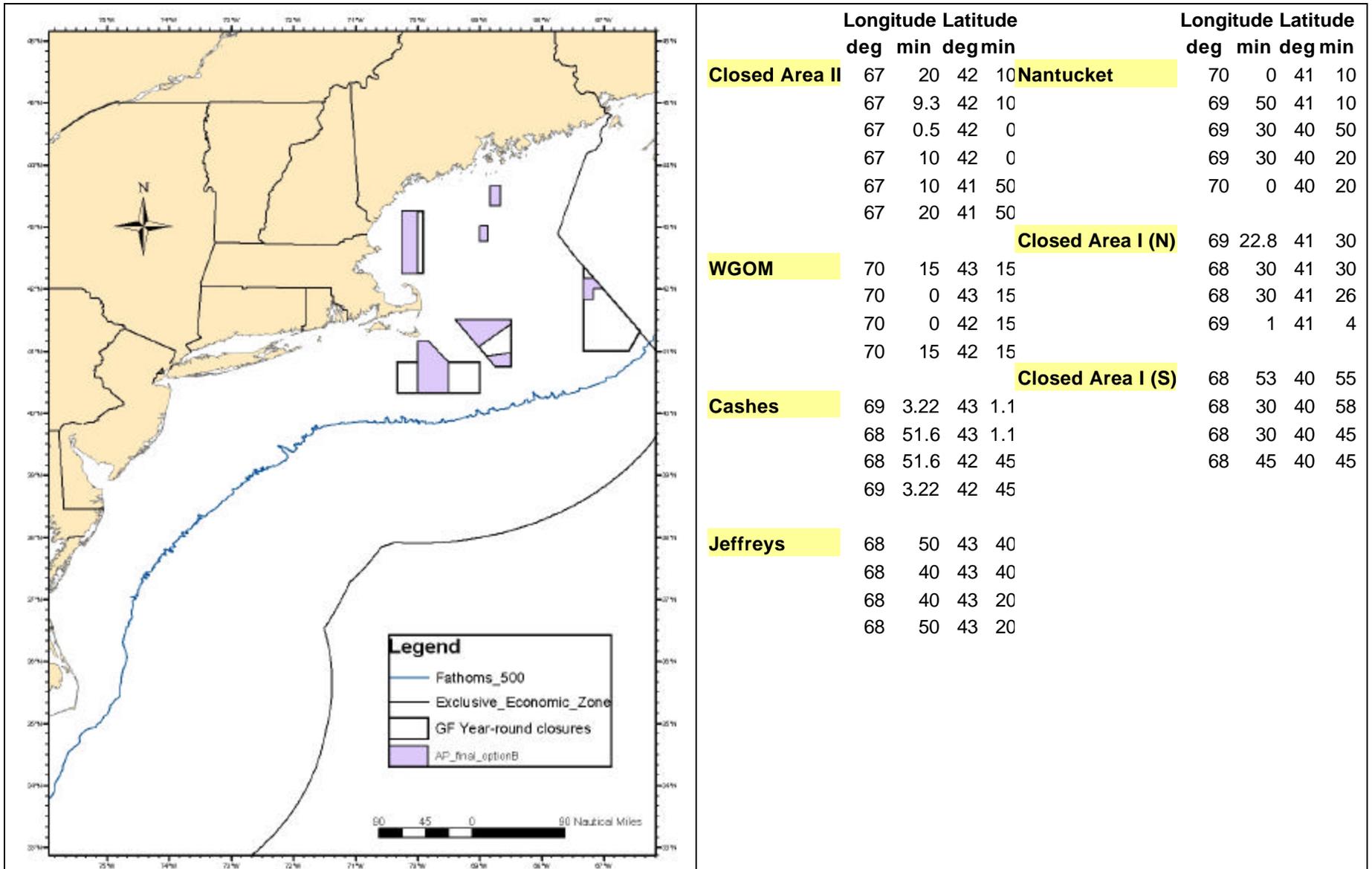
4.2.3.3 Habitat closed areas consistent with Amendment 10 to the Sea Scallop FMP and with Amendment 13 to the Northeast Multispecies FMP (Approval of both habitat closed area alternatives)

Existing habitat closures in Amendment 10 to the Sea Scallop FMP (applying to scallop fishing gear only) and Amendment 13 to the Multispecies FMP (a Level III closure applying to scallop fishing gear and other mobile bottom tending gear) would apply (see Map 8). **Access alternative 3 (Section 4.2.2.3) is consistent with this habitat closure alternative.**

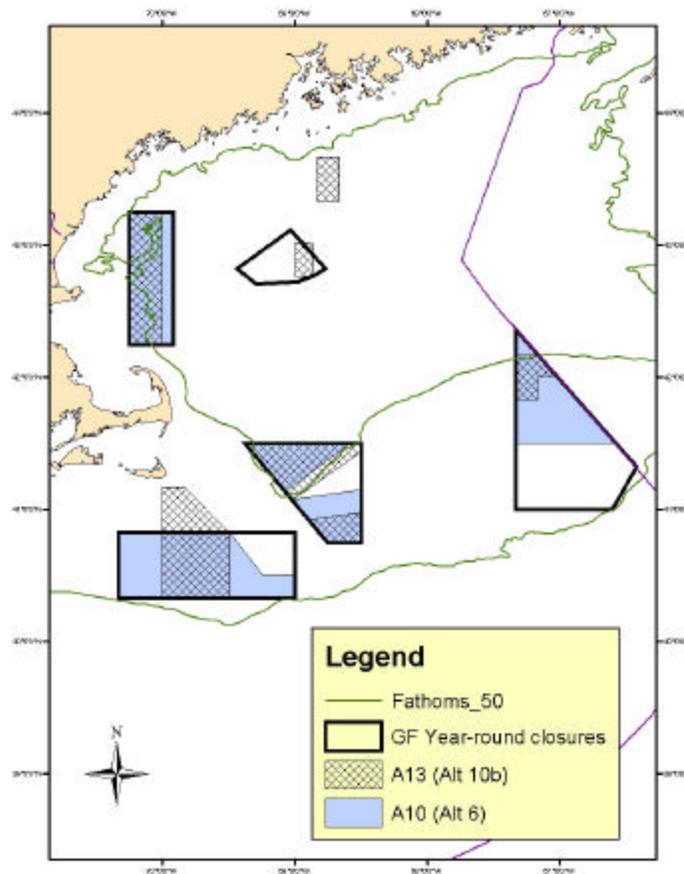
Rationale : If the Council takes no action in the framework adjustment and both amendments are approved, this alternative would provide the highest protection of EFH but would restrict access to scallop biomass in the groundfish closed areas. This alternative might be chosen if there were some benefit associated with closing areas to scallop fishing, where they do not overlap habitat closures to other gears in the Northeast Multispecies FMP. The Council took final action on Amendment 10 to the Atlantic sea scallop fishery just prior to the final actions on Amendment 13 to the Northeast multispecies FMP. It was the Council's intent to select Alternative 6 in the Scallop FMP and review this decision to match the final Habitat Closed Area alternative selected in Amendment 13, if different. With the selection of the HCA detailed in Habitat Alternative 10b, it is the intent of the Council to consider replacing the Amendment 10 HCA with the Amendment 13 HCA in Framework 16 in order to remedy the inconsistent habitat closure areas.



Map 6. Habitat closure for scallop fishing gear in Scallop Amendment 10 (Section 4.2.3.1).



Map 7. Habitat closure areas for mobile bottom tending fishing gears (Level III) in Multispecies Amendment 13 (Section 4.2.3.2).



Map 8. Combined habitat closures areas that would apply to scallop fishing gear, if both Scallop Amendment 10 and Multispecies Amendment 13 are approved (Section 4.2.3.3).

4.2.4 Gear Restrictions

4.2.4.1 Allow scallop fishing by limited access vessels using trawls and dredges

Vessels having limited access scallop permits would be allowed to use legal scallop dredges and trawls. Vessels using scallop trawls must have a trawl-authorized limited access scallop permit. Because fishing by general category vessels requires a groundfish exemption for fishing with scallop dredges while not on a groundfish DAS, vessels with general category permits would be required to use a 10½ ft. or smaller scallop dredge, with a 10-inch twine top in accordance with Amendment 10 rules.

Rationale: Unlike previous framework adjustments proposing controlled access to Georges Bank areas, trawl-authorized vessels that cannot convert to scallop dredge use would be unable to use their controlled access DAS allocations in the controlled access areas. Under Amendment 10 regulations, vessels will be obligated to fish in controlled access areas to use their full complement of limited access DAS allocations.

Alternatively, these vessels with trawl-authorized permits would need to trade the Georges Bank controlled access trips, for Hudson Canyon Area trips, at a possible disadvantage. A vessel that can use only trawls may find a trade more difficult to arrange, because it is less costly to fish in the Hudson Canyon Area (making them more valuable), because the Georges Bank areas may close due to the catch reaching the yellowtail flounder TAC, and because of scallop meat count differences.

Even though there are two “relief valves” (use dredges or trade trips) to mitigate the inequity, this alternative would reduce costs to limited access vessels that use scallop trawls.

4.2.4.2 Allow scallop fishing by limited access vessels using dredges only

Limited access scallop vessels that fish in the Nantucket Lightship Area, Closed Area I, or Closed Area II must use a scallop dredge that conforms to §648.51 (Gear and Crew Restrictions) and §648.2 (definition of “dredge or dredge gear”), including ring size, configuration and linkage, and maximum width. According to this regulation, the combined dredge width shall not exceed 31 feet (9.4 m).

Vessels with general category scallop permits that fish in the closed areas under Section 4.1.11 must also comply with these regulations, but the total width of the dredge may not exceed 10.5 feet (3.2 m). General category vessels must have no more than one dredge onboard during a closed area trip.

Rationale : High bycatch while using a scallop trawl (essentially a modified flatfish trawl) in the Georges Bank areas could prevent the FMP from achieving optimum yield, because the access program would probably close prematurely due to high yellowtail flounder catches.

Limited access vessels would be required to comply with the existing regulations that apply to any other scallop area when the vessel is in the day-at-sea program. Although vessels with a general category permit are limited to 400 lbs. per day or trip (whichever is greater), current regulations allow the use of dredges with a total width of 31 feet.

Vessels that have trawl-authorized limited access permits have three options for the Georges Bank area access allocations:

1. **Trade the DAS for other areas where scallop trawls are allowed.** Vessels may trade Georges Bank access area trips for Hudson Canyon Area trips, where the Scallop FMP allows fishing with scallop trawls. Thus a vessels that uses dredges could end up with more trips than originally allocated to fish in the Georges Bank access areas, but fewer trips in the Hudson Canyon Area, and vice versa for scallop vessels that can only use trawls due to vessel and equipment limitations.
2. **Switch to using scallop dredges in the Georges Bank access areas.** This is a viable option for vessels that can be equipped for fishing with dredges. These vessels will be able to return to using scallop trawls elsewhere, after using dredges in the Georges Bank access areas.
3. **Do not utilize the Georges Bank access area allocations.** Many trawl-authorized scallop vessels fish in the Mid-Atlantic and do not fish in the New England area. Although more costly than before with Amendment 10’s area-specific DAS allocations, the trawl-authorized vessels would be able to fish the number of days in Mid-Atlantic areas that are determined to produce optimum yield. In 2004, vessels that do not use Georges Bank controlled access allocations

would be able to fish for 42 DAS in open areas and 48 DAS in the Hudson Canyon Area, totaling 90 DAS.

4.2.4.3 Twine top configuration – Mesh hanging ratio for vessels fishing in the Nantucket Lightship Area

Limited access and general category vessels fishing in the Nantucket Lightship Area will be required to attach or “hang” twine tops with no less than a 1:1 ratio, i.e. twine tops must have the same number of meshes as there are rings adjacent to the twine top. Consistent with Amendment 10, vessels using scallop dredges must use 10” minimum mesh twine tops and minimum 4” rings.

Rationale: Research has shown significant reductions in bycatch of some species, in particular yellowtail flounder, when the twine top is hung with a 1:1 ratio – when scallops are very large, e.g. U-10 meat counts. During 2004, the average meat count for landed scallops is expected to be around 10 count in the Nantucket Lightship Area, 15 count in Closed Area I, and 13 count in Closed Area II. Average scallop size (lower meat count) is expected to increase slightly in 2005-2007, but is not expected to reach 10 count in either Closed Area I or II.

4.2.5 Groundfish Catch Limits

4.2.5.1 Hard TAC for yellowtail flounder bycatch; areas close to scallop fishing with no provision to transfer unused DAS to open areas

Yellowtail flounder catches would be closely monitored using a combination of observed trips and vessel trip reports (VTR) to determine and project in real time when the yellowtail flounder catches for controlled access trips has or will equal the TACs. The yellowtail flounder TACs are specified in the table below, but will change automatically if the TACs in the Multispecies FMP are adjusted. When the Regional Administrator determines that the controlled access fishery will meet the yellowtail flounder TAC for the applicable stock, the applicable areas will close to scallop fishing and no more controlled access trips may be taken in them. Since Closed Area I and II fall within the Georges Bank yellowtail flounder stock area, catches in one access area that in combination with the other area meet the yellowtail flounder TAC shall cause the Regional Administrator to close both access areas to scallop fishing.

Limited access vessels may continue to utilize controlled access trip and DAS allocations in controlled access areas that remain open, as long as the total number of trips taken by a vessel does not exceed the limit for each area, subject to vessel-specific conditions due to trading of controlled access trips among vessels.

In order to avoid closing the Georges Bank access programs when the scallop bycatch TAC is achieved but the total Georges Bank yellowtail flounder TAC is unlikely to be achieved by the end of the groundfish fishing year, the Regional Administrator may increase the Georges Bank yellowtail flounder bycatch TAC for the scallop access programs. The total catch (landings and discards by all vessels) of yellowtail flounder will be evaluated no earlier than December 1. If the Regional Administrator determines that it is unlikely that the total Georges Bank yellowtail flounder TAC will be taken by the end of the groundfish fishing year, the Regional Administrator can increase the scallop bycatch of Georges Bank yellowtail flounder. Any increase shall not exceed fifty percent of the difference between the projected catch and the total TAC, i.e. 50 percent of (Total TAC - Projected catch (combined scallop and groundfish)).

If the yellowtail flounder bycatch from the Closed Area I and Closed Area II scallop fishing meets the 10% TAC limit before December 1, the areas will close to scallop fishing. If the Regional Administrator determines that the yellowtail flounder TAC for the scallop fishery may be raised without risking the entire fishery from exceeding the Georges Bank yellowtail flounder TAC, the areas may re-open to scallop fishing under the adjusted fishery TAC. If the areas remain open to scallop fishing through December 1, or when the Regional Administrator determines that the yellowtail flounder TAC may be adjusted, the area would simply remain open until the new yellowtail flounder bycatch limit had been reached.

N.B.: The above option to raise the yellowtail flounder bycatch limit that would apply to the access program was not an alternative that the Council approved for Amendment 10. Staff added this alternative to the document to give the Council the flexibility to choose this option if it seems prudent to do so.

Rationale and allocations : A hard TAC is needed to ensure that regulated multispecies catches do not exceed biological limits. Closing areas and not allowing the trips to be transferred or used in the open fishing areas is consistent with the area-specific DAS allocation policy in Amendment 10.

Table 30. TACs and projected catch estimates. TACs for Southern New England yellowtail flounder are from the catch projections in Multispecies FMP Amendment 13 and for Georges Bank yellowtail flounder from the Transboundary Monitoring Group Committee that establishes TACs under the joint sharing agreement with Canada. Estimated yellowtail flounder bycatch that exceeds the TACs are boldfaced.

Yellowtail flounder stock	Controlled access areas	Year	TAC (10% of US allocation) (mt)	Expected yellowtail flounder catch (mt)	
				Amendment 10 rotation	New rotation
Southern New England	Nantucket Lightship Area	2004	70.7	134	74
		2005	198.2	0	0
		2006	332.5	0	308
		2007	611.8	0	378
Georges Bank	Closed Areas I & II	2004	600	50	906
		2005	600	1006	863
		2006	600	887	26
		2007	600	752	767

There is a possibility that the catch of yellowtail flounder, by all vessels, will not reach the target, or hard, TAC as determined by the groundfish plan. This is most likely for the TAC of GB yellowtail flounder, particularly if the Closed Area II groundfish SAP is not approved, or is not effective in

increasing the harvest of yellowtail flounder. It would not make sense to limit scallop access to the closed area based on bycatch of yellowtail flounder if additional catches can be supported by the stock. The decision is delayed until the end of December, coincident with the end of the Closed Area II SAP for groundfish vessels, in order to provide sufficient data with which to develop a reliable projection of the year's catch. In recent years, roughly half of the total GB yellowtail flounder landings have occurred by the end of December. The limit on the increase to half of the difference between the projected catch and the total TAC provides a margin of safety should the projected catch under-estimate the actual catch.

In-season adjustments to the yellowtail flounder TACs to respond to the actual catches in other fisheries is not a risky approach for Georges Bank yellowtail flounder and in fact may improve the ability for management to achieve optimum yield when the groundfish fishery catches are lower than anticipated. On the other hand, Southern New England yellowtail flounder are under a formal rebuilding program and adjusting the TACs under this circumstance does not seem to be prudent until the stock rebuilds.

4.2.5.2 Hard TAC for yellowtail flounder bycatch, with a provision for vessels to transfer unused controlled access trips for fishing in open areas following area closures

The above TACs would apply to the access areas in the yellowtail flounder stock designations and would close to scallop fishing when the Regional Administrator determines that the controlled access fishery yellowtail flounder catch will meet the TAC for the applicable stock. The difference with the above alternative is that limited access may fish the unused controlled access DAS allocations in open fishing areas, subject to the provisions in the options below. These transfer procedures would apply to traded trips, as well as original allocations. If controlled access areas do not close to scallop fishing because of the yellowtail flounder TAC being reached, vessels may not transfer trips to the open areas. Since this procedure only applies where a yellowtail flounder TAC exists, it does not apply to the Hudson Canyon Area controlled access allocations (whether traded or not).

In order to avoid closing the Georges Bank access programs when the scallop bycatch TAC is achieved but the total Georges Bank yellowtail flounder TAC is unlikely to be achieved by the end of the groundfish fishing year, the Regional Administrator may increase the Georges Bank yellowtail flounder bycatch TAC for the scallop access programs. The total catch (landings and discards by all vessels) of yellowtail flounder will be evaluated no earlier than December 1. If the Regional Administrator determines that it is unlikely that the total Georges Bank yellowtail flounder TAC will be taken by the end of the groundfish fishing year, the Regional Administrator can increase the scallop bycatch of Georges Bank yellowtail flounder. Any increase shall not exceed fifty percent of the difference between the projected catch and the total TAC, i.e. 50 percent of (Total TAC - Projected catch (combined scallop and groundfish)).

If the yellowtail flounder bycatch from the Closed Area I and Closed Area II scallop fishing meets the 10% TAC limit before December 1, the areas will close to scallop fishing. If the areas remain open to scallop fishing through December 1, or when the Regional Administrator determines that the yellowtail flounder TAC may be adjusted, the area would simply remain open until the new yellowtail flounder bycatch limit had been reached. Areas will not re-open to scallop fishing once they are closed under this alternative, even though an increase in the TAC might be justified.

N.B.: The above option to raise the yellowtail flounder bycatch limit that would apply to the access program was not an alternative that the Council approved for Amendment 10. Staff added this alternative to the document to give the Council the flexibility to choose this option if it seems prudent to do so.

Rationale and allocations: This alternative would allow the Scallop FMP to achieve optimum yield even though the access program might prevent full access to land the scallop TACs. Vessels unable to take controlled access trips would fish in the open fishing areas, up to limits that were determined to produce optimum yield if there were no access.

As in the alternative above, there is a possibility that the catch of yellowtail flounder, by all vessels, will not reach the target, or hard, TAC as determined by the groundfish plan. This is most likely for the TAC of Georges Bank yellowtail flounder, particularly if the Closed Area II groundfish SAP is not approved, or is not effective in increasing the harvest of yellowtail flounder. It would not make sense to limit scallop access to the closed area based on bycatch of yellowtail flounder if additional catches can be supported by the stock. The decision is delayed until the beginning of December, near the end of the Closed Area II SAP for groundfish vessels, in order to provide sufficient data with which to develop a reliable projection of the year's catch. In recent years, roughly half of the total Georges Bank yellowtail flounder landings have occurred by the end of December. The limit on the increase to half of the difference between the projected catch and the total TAC provides a margin of safety should the projected catch under-estimate the actual catch.

Unlike alternative 1, above, this alternative would allow vessels to fish unused controlled access DAS in open areas, once a controlled access area closes because of the yellowtail flounder TAC. The yellowtail flounder TAC adjustment procedure therefore could only be effective if the areas remain open through December 1, because vessels will have already taken controlled access trips in open areas. Doing so and re-opening a controlled access area under these circumstances would be administratively complicated and would fail to account for the added yellowtail flounder mortality associated with these extra trips in the open scallop fishing areas.

In-season adjustments to the yellowtail flounder TACs to respond to the actual catches in other fisheries is not a risky approach for Georges Bank yellowtail flounder and in fact may improve the ability for management to achieve optimum yield when the groundfish fishery catches are lower than anticipated. On the other hand, Southern New England yellowtail flounder are under a formal rebuilding program and adjusting the TACs under this circumstance does not seem to be prudent until the stock rebuilds.

4.2.5.2.1 Option 1: provision to allow vessels to take remaining trips in open areas up to limits specified in Amendment 10 with no access

Vessels may transfer unused controlled access DAS allocations to fish in open areas, up to the number of default DAS allowed in Amendment 10 under no access (20 DAS transfer limit in 2004 for full-time vessels; 8 DAS in 2004 for part-time vessels, and 1 DAS in 2004 for occasional vessels)

When a Georges Bank controlled access area closes, because the yellowtail flounder catch is estimated to meet the annual TAC, vessels with unused controlled access trips may take trips in open areas (not including the Hudson Canyon Area, controlled access areas, or other areas that are closed to scallop fishing) up to: 1) the difference between the number of trips taken in that area and the maximum number of trips allowed in that area for a limited access vessel, or 2) the difference between the open area allocations with access and the default Amendment 10 open area allocations without access, whichever is less. This transfer procedure applies to traded trips, as well as original allocations. If controlled access areas do not close to scallop fishing because of the yellowtail flounder TAC being reached, vessels may not transfer trips to the open areas.

For example, a vessel that has taken two of three controlled access trips, may fish for 12 additional DAS in the open areas (totaling 42+12=54 DAS for the fishing year). In 2004, the DAS allocation for open areas without access is 62, meaning that any vessel can transfer no more than 20 DAS from a closed controlled access to open areas. So a vessel that has taken only one of three or has not yet fished in a closed controlled access area, may transfer no more than 20 DAS to the open areas, totaling 62 open area DAS for the fishing year. The table below provides the maximum number of controlled access days that may be transferred by limited access vessels.

Table 31. Maximum number of controlled access DAS that may be transferred to open fishing areas, due to early closure from bycatch meeting the TACs, derived from Table 8 in Amendment 10.

Amendment 10 allocation	Limited access category	2004	2005	2006 (default)
Open area DAS allocations without access	Full-time	62	117	152
	Part-time	25	47	61
	Occasional	5	10	13
Open area DAS allocations with access	Full-time	42	40	67
	Part-time	17	16	27
	Occasional	4	3	6
Maximum amount of unused controlled access DAS to be transferred	Full-time	20	77	85
	Part-time	8	31	34
	Occasional	1	7	7

Rationale : This relieves the burden on individual vessels that cannot take controlled access trips before areas are closed for the bycatch TAC, while allowing the FMP to achieve optimum yield, as structured by Amendment 10. At the same time, the limit on the number of trips that a vessel may transfer from closed controlled access to open areas prevents overfishing.

4.2.5.2.2 Option 2: Provision to allow vessels to transfer unused controlled access DAS allocations, prorated by fleet-wide DAS use, to take unused controlled access DAS in open areas

Vessels may transfer all unused controlled access DAS allocations, as adjusted to ensure that the fleet-wide annual open area DAS use does not exceed that limits specified in Amendment 10 (proration by fleet-wide DAS)

When a Georges Bank controlled access area closes, because the yellowtail flounder catch is estimated to meet the annual TAC, vessels with unused controlled access trips may take trips in open areas (not including the Hudson Canyon Area, controlled access areas, or other areas that are closed to scallop fishing) up to the number of DAS associated with unused controlled access trips for the closed

access areas. In cases, where the remaining, unused controlled access DAS by the fleet exceed the difference in the total DAS allocations for open areas with and without access (see table below), NMFS will apply a factor to the transferred DAS allocations to account for the potential overage. This transfer procedure applies to traded trips, as well as original controlled access allocations. If controlled access areas do not close to scallop fishing because of the yellowtail flounder TAC being reached, vessels may not transfer trips to the open areas.

For example, if the remaining total unused controlled access DAS for an area is 10,000 DAS, but the difference in open area DAS allocations with and without access in Amendment 10 is 5,000 DAS, then NMFS will authorize vessels to use 50% of their remaining DAS in the open areas. Another example, using the Amendment 10 allocations are shown in the table below:

Table 32. Example calculation of DAS proration, based on fleet-wide DAS use in controlled access areas, assuming an average of 2.5 unused trips per vessel

	2004		2005		2006 & 2007	
	Allocated	Expected DAS use	Allocated	Expected DAS use	Allocated	Expected DAS use
Open area DAS allocations without access (62 full-time DAS in 2004)	18,104	17,130	34,164	30,359	47,320	34,164
Open area DAS allocations with access (42 full-time DAS in 2004)	12,264	11,657	11,680	11,134	19,564	11,680
Maximum amount of unused controlled access DAS to be transferred	5,840	5,473	22,484	19,225	27,756	22,484
Potential transfer of unused controlled access DAS (2.5 x 292 x 12)	8,760	8,210	8,760	8,210	8,760	8,210
Factor to be applied to transfer of 10,000 DAS from a closed controlled access area	0.667		1.000		1.000	
Open area DAS after proration	18,104	17,130	20,440	19,344	28,324	19,890

4.2.5.2.3 Option 3: Provision to allow vessels to transfer unused controlled access DAS allocations, prorated by fleet-wide DAS use to take remaining trips in open areas

Vessels may transfer all unused controlled access DAS allocations, adjusted by the predicted open area landings per DAS so that the expected catch is 18,000 lbs. per unused trip (proration by landings limits).

When a Georges Bank controlled access area closes, because the yellowtail flounder catch is estimated to meet the annual TAC, vessels with unused controlled access trips may take trips in open areas (not including the Hudson Canyon Area, controlled access areas, or other areas that are closed to scallop fishing) up to the number of DAS associated with unused controlled access trips for the closed access areas. The open area DAS will be the amounts show in the table below for each unused controlled

access trip that cannot be taken due to a controlled access closure. This transfer procedure applies to traded trips, as well as original controlled access allocations. If controlled access areas do not close to scallop fishing because of the yellowtail flounder TAC being reached, vessels may not transfer trips to the open areas.

Table 33. Proration factors for controlled access DAS transfers to open fishing areas when controlled access areas close due to the fishery reaching the yellowtail flounder TAC.

Fishing year	LPUE	DAS adjustment factor	DAS transferred per unused controlled access trip
2004	1,952	0.77	9.2
2005	2,189	0.69	8.2
2006	2,245	0.67	8.0
2007	2,344	0.64	7.7

Rationale : This alternative will allow the fleet to land the same amount of scallops from the open areas as it would have landed from the controlled access areas on unused trips. Thus, the proration would limit the amount of mortality in the open areas so that it approximates the amount expected in Amendment 10 without access to the Georges Bank closed areas.

4.2.5.2.4 Option 4: Vessels may transfer all unused controlled access trips to fish in open fishing areas, with or without a scallop possession limit and other regulations pertaining to controlled access trips

When a Georges Bank controlled access area closes, because the yellowtail flounder catch is estimated to meet the annual TAC, vessels would be able to fish the remaining unused controlled access trips in open fishing areas (not including the Hudson Canyon Area, controlled access areas, or other areas that are closed to scallop fishing) to use these allocations to fish for scallops.

If NMFS can monitor and enforce a scallop possession limit and other controlled access regulations for vessels fishing on transferred trips, then the vessel would be charged 12 DAS for that trip and the trip would have an 18,000 lb. scallop possession limit. If NMFS cannot monitor and enforce these regulations on transferred trips, then the vessel would be able to fish 12 DAS in the open areas for each controlled access trip that cannot be taken because of a TAC closure.

Rationale : This alternative would substantially reduce the incentive to fish in the controlled access areas as quickly as possible. The incentive is reduced because limited access vessels would be able to take the remaining trips in the open fishing areas.

On the other hand, there is the possibility that the transfer of trips, the associated scallop mortality, and fishing effort could exceed the “No Access” allocations that the Council analyzed and approved in Amendment 10. If the effort shift results in more effort than Amendment 10 anticipates, the impacts would need extensive further analysis, which has not been possible in the framework approval schedule for this action. Furthermore, if there is a scallop possession limit on transferred trips, it would require controlled access monitoring and enforcement for these trips, anywhere they might occur.

The risk of exceeding the yellowtail flounder TAC rises with the more things change relative to the Framework Adjustment 13 measures, on which the bycatch estimates are based using observer data. If the bycatch amounts are as predicted by the analysis for this action, then most of the controlled access

trips will be taken by the limited access vessels and effort transfers to the open areas would be less likely to exceed the amounts analyzed in Amendment 10.

4.2.5.3 Yellowtail flounder bycatch set-aside for research and research compensation

Two percent of any yellowtail flounder bycatch TAC would be set-aside to account for bycatch taken in the course of an approved research trip or trip approved to collect scallops to generate research funds in the closed areas. Yellowtail flounder bycatch on approved research and compensation trips would be monitored directly and reported by the research entity on research trips and extrapolated on compensation trips at the rate established for the commercial fishery through the observer program. Compensation trips could take place at any time during the approved scallop season so long as the yellowtail flounder bycatch TAC set-aside for research had not been exceeded.

Rationale: This issue was not recognized by the Scallop Oversight Committee, the Groundfish Oversight Committee, or the Council at its January 2004 meeting. Without this alternative, however, it would be difficult for the NMFS to authorize research or compensation in the controlled access areas and conducted under a scallop TAC set-aside without an appropriate yellowtail flounder TAC set aside, also. Amendment 10 establishes a two-percent set-aside for conducting scallop and scallop related research or surveys.

4.2.5.4 Procedures to achieve voluntary actions to minimize bycatch

In addition to the hard TACs for yellowtail flounder, access to real-time information and other procedures could help the industry to avoid bycatch of yellowtail flounder and other species, possibly preventing early closure of the access program during the fishing year. The following efforts are expected to help achieve this goal and elicit voluntary cooperation:

4. Disseminate analysis of existing information about seasonal distributions of yellowtail flounder and other species in the access areas, based on previous surveys and sea sampling.
5. Alert vessel captains about “bycatch hotspots” in the access areas identified from real-time data collected by NMFS, via the VMS or other sources of communication. This information may be derived from sea sampling, vessel trip reports, or informal reports by scallop fishermen working in the access areas.
6. Work with industry to develop and publish information about best practices to reduce bycatch and bycatch mortality, such as reducing speeds before haul-backs and other ideas developed by the Advisory Committee, the PDT, or others.

Rationale : Scallop fishermen will use this information to decide where and how to fish, potentially reducing bycatch and/or keeping the area open to scallop fishing.

4.2.5.5 No TACs for finfish bycatch (No Action)

Framework Adjustment 16/39 would set no limits on the amount of groundfish bycatch that could be caught during the access program. Controlled access would continue during a fishing year until available trip allocations had been used or the scallop TAC had been met.

Rationale: Groundfish bycatch would be minimized by the application of controlled access trips and DAS allocations, 10” twine top mesh, possible adjustments to the mesh hanging ratio to improve finfish escapement, access seasons, and access boundaries. Thus, the scallop fleet would realize the full benefits of the available scallop TACs.

4.2.6 Finfish Possession Limits

4.2.6.1 Groundfish possession limit equal to 300 pounds per trip and monkfish possession limit equal to 300 pounds of tails (996 pounds whole-weight) per DAS (No Action)

The existing possession limits for finfish would apply on all controlled access trips. Under the Multispecies FMP, scallop vessels would be allowed to retain no more than 300 lbs. (136.1 kg) of regulated multispecies when fishing on a scallop DAS, provided that the vessel does not fish for, possess, or land haddock from January 1 through June 30 and provided the vessel has at least one standard tote on board. Combination vessels may not use a Multispecies DAS when fishing on a controlled access trip in the groundfish closed areas.

Unless using approved gear for a monkfish DAS and fishing under a monkfish category C or D permit, scallop vessels fishing on a controlled access trips would be allowed to retain no more than 300 lbs. (136 kg) tail weight per DAS [996 lbs. (452 kg) whole weight per DAS]. DAS for determining possession limits are counted as actual time at sea, not the full 12 DAS for a controlled access trip³⁰.

All finfish possession limits and allowances are subject to the minimum size restrictions specified in the Multispecies and Monkfish FMPs.

Rationale: Maintaining the current finfish possession limits might reduce the incentive to continue fishing in locations with above average bycatch occurs, within the access areas. It would also improve enforceability by having consistent groundfish possession limits over all areas.

4.2.6.2 Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder

Scallop vessels on a controlled access trip for the Nantucket Lightship Area, Closed Area I, or Closed Area II would be allowed to retain and possess up to 1000 lbs./trip (453.6 kg) of regulated multispecies provided that the vessel does not fish for, possess, or land haddock from January 1 through June 30 and provided the vessel has at least one standard tote on board. Combination vessels may not use a Multispecies DAS when fishing on a controlled access trip in the groundfish closed areas.

Furthermore, when fishing in the Nantucket Lightship Area on a scallop DAS on controlled access trips ending after March 1 or trips beginning before June 30, vessels would be allowed to retain

³⁰ For all intents and purposes, fishing a monkfish DAS on a controlled access trip would be impractical since a standard scallop dredge and trawl are unlawful gears on a vessel fishing under a monkfish category C or D permit, although a scallop trawl with large monkfish mesh might theoretically be used to fish for monkfish (and very large scallops).

and possess no more than 250 lbs./trip of yellowtail flounder. The yellowtail flounder would count against the 1000 lbs./trip limit described in the above paragraph.

Unless using approved gear for a monkfish DAS and fishing under a monkfish category C or D permit, scallop vessels fishing on a controlled access trips would be allowed to retain no more than 300 lbs. (136 kg) tail weight per DAS [996 lbs. (452 kg) whole weight per DAS]. DAS for determining possession limits are counted as actual time at sea, not the full 12 DAS for a controlled access trip³¹.

All finfish possession limits and allowances are subject to the minimum size restrictions specified in the Multispecies and Monkfish FMPs.

Rationale: Observed catches of regulated multispecies exceeded 300 lbs./trip in the 1999 and 2000 access programs. With a 300 lbs./trip possession limit in 1999, this forced vessels to discard otherwise legal fish, increasing bycatch. It may have also inflated the estimated yellowtail flounder catches, because some vessels may have been re-catching the dead discard from their own trip, or from other vessels operating in the vicinity.

Since controlled access trips are carefully monitored using catch reports and an enhanced level of observer coverage, and because scallop catches are high in the controlled access areas, this alternative would reduce bycatch without creating higher incentives for targeting regulated multispecies in the groundfish closed areas. This alternative would make the regulated multispecies possession limit the same as the amount approved for the 2000 fishing year under Framework Adjustment 13. During the 2000 fishing year, this measure appeared to reduce discards without harming the resource.

4.2.6.3 Additional cod possession limit for personal use equal to 100 pounds per trip (per vessel) for personal use

Vessels on controlled access trips while fishing on a scallop DAS in the groundfish closed areas would be allowed to retain up to 100 lbs. per trip (per vessel) for personal use, including consumption on board the vessel or landing for non-commercial use.

Rationale: Scallop vessels infrequently catch legal size cod that rarely survive discarding when caught by dredges. While fishing in open areas, some vessels use the catch to feed the crew, or allow the crew to take some of the catch home. Continuation of this regulation and practice while fishing in the controlled access areas is unlikely to cause targeting or increase groundfish mortality.

Also, vessels may have seafood products onboard for grub, which technically may be confused as filleted cod that were caught and cause a violation of a zero cod possession limit. This allowance would prevent this type of technical violation and permit the vessel to carry codfish fillets as grub.

³¹ For all intents and purposes, fishing a monkfish DAS on a controlled access trip would be impractical since a standard scallop dredge and trawl are unlawful gears on a vessel fishing under a monkfish category C or D permit, although a scallop trawl with large monkfish mesh might theoretically be used to fish for monkfish (and very large scallops).

4.2.6.4 Cod possession regulated under an aggregate groundfish possession limit (No Action)

Limited access scallop vessels would be able to retain legal-size cod, as long as it does not cause the retained catch of groundfish to exceed the aggregate limit, defined in Sections 4.2.6.1 or 4.2.6.2.

Rationale : This alternative would reduce regulatory discards and minimize bycatch mortality. Additional landings restrictions are unnecessary because vessels on a controlled access trip for areas with high scallop biomass will not be targeting cod.

4.2.6.5 Zero cod possession limit

Limited access vessels fishing on a controlled access trip in Closed Area I, Closed Area II, or the Nantucket Lightship Area would be prohibited from retaining cod.

Rationale : This measure would maximize the survival of cod that might otherwise be retained under the aggregate groundfish limit.

4.2.7 Access Seasons

4.2.7.1 Sequential controlled access within a fishing year

Controlled access areas will open sequentially during defined seasons when bycatch was known to be low. Access to Closed Area II would occur first, beginning on June 15 of each fishing year. Once Closed Area II is no longer open, access to the Nantucket Lightship Area would begin on August 14 of each fishing year. Once the Nantucket Lightship Area is no longer open, access to Closed Area I would begin on October 1 and remain open (unless closed due to yellowtail flounder catches reaching the 10% TAC limit) until January 31. This is the same sequence and procedure that applied in Framework Adjustment 13, during the 2000 scallop fishing year.

Table 34. Access seasons during the 2000 fishing year program.

Area	Controlled access season during the 2000 fishing year
Closed Area II	June 15 to August 14
Nantucket Lightship Area	August 14 to September 30
Closed Area I	October 1 to January 31

Rationale: This alternative is incompatible with the alternative mechanical rotation strategy (Section 4.2.11.2), because Framework Adjustment 16/39 is unlikely to be implemented before August 14. It would therefore mean that only the Nantucket Lightship Area would be open to scallop fishing during the 2004 fishing year, and that Closed Area II would be open only during 2005 and 2007, reducing the expected net benefits.

These controlled access seasons were in place during the 2000 scallop fishing year, when Closed Area I, Closed Area II and the Nantucket Lightship Area were last open to limited scallop fishing. This is also the basis for bycatch data collected by observers and the basis for the current bycatch estimates. Sequential access might reduce the enforcement resource to monitor fishing activity and ensure

compliance, but this need is largely met by mandatory VMS for all vessels participating in the access program.

Not allowing access during February 1 to June 14 would avoid having scallop fishing when many species of groundfish are at peak spawning activity. Partly intended as spawning closures when they were first identified, several species are concentrated in the Georges Bank groundfish closed areas (particularly Closed Area I and II) during the peak spring spawning, and then disperse after spawning.

The Groundfish PDT recommended that scallop fishing not take place during February to June, due to concerns over high levels of groundfish spawning activity, which might be effected by scallop fishing. Groundfish tend to be more highly concentrated in the groundfish closed areas during spawning and may therefore be more susceptible to discarding in the scallop fishery. Section 6.2.7.1.2 provides more information about spawning activity and groundfish bycatch.

In addition to the above concern, there is uncertainty of groundfish bycatch during February to early June. Bycatch projections are possible for June 15 to January 31, because they are based on observer data during this season in the 2000 fishing year. No data are available to estimate groundfish bycatch outside this time period.

4.2.7.2 Simultaneous access within a fishing year, all areas open June 15 to January 31

All access areas within the Nantucket Lightship Area, Closed Area I, and Closed Area II would open on June 15 of each year, provided that that area was slated for scallop fishing according to the rotation schedule in Section 4.2.11. The areas would remain open until January 31, unless the yellowtail flounder catches met the bycatch TACs for a stock area (Section 4.2.5). The overall season is the same as the one that applied in Framework Adjustment 13 during the 2000 scallop fishing year, but all areas could be open for fishing simultaneously.

Rationale: Area access was allowed during June 15 to January 31, during the 2000 fishing year under Framework Adjustment 13, and groundfish bycatch was below the thresholds set by the Council. It appears that simultaneous access is manageable due to the ability to monitor scallop fishing activity via mandatory VMS on all vessels participating in the access program. Requiring scallop vessels to declare which area they intend to fish and requiring them to fish only that area during a trip bolsters this enforcement capability without taxing enforcement resources.

Furthermore, allowing simultaneous access spreads out fishing activity, reducing potential gear conflict, reducing the effects of scallop shucking from discarded shells and meats, reducing the potential for market gluts, and allowing fishermen more flexibility to maximize catch per effort while avoiding bycatch.

4.2.7.3 Year around access

Controlled access areas within the groundfish closed areas would be open for controlled access scallop fishing at the start of the fishing year (March 1; or the date of implementation in 2004), remaining open until either the scallop or yellowtail flounder TACs had been taken by the fishery.

Rationale: Many existing measures and effects of alternatives in this framework adjustment (e.g. finfish escapement through the twine top, reducing fishing time relative to the amount of fishing time outside of

the access areas, finfish TACs) are expected to minimize bycatch. Also meat yield and quality are best during the spring when scallop growth is taking place and scallop spawning is not occurring. With a scallop TAC, less fishing takes place overall if the scallops are caught when the meat yield is highest. This alternative would also relieve the safety concerns about compressing the season into the August to December hurricane and nor'easter season. Spreading the season out will also help to maximize economic returns by reducing the potential for market gluts of large scallops, depressing prices.

Although these effects cannot be quantified and bycatch projections during the spring cannot be estimated with existing data, the above factors weigh in favor of a year around access, provided that finfish bycatch does not exceed the 10% limits recommended by the Groundfish PDT and Oversight Committee. Species (particularly cod and haddock) whose spawning may be disrupted by fishing activity have less overlap with the locations where scallop fishing is likely to take place (particularly in the southern half of Closed Area II and in the Nantucket Lightship Area).

4.2.8 At-Sea Observers, TAC Set-Aside, And Fishery Monitoring

4.2.8.1 Enhanced sampling frequency (to achieve at a precision that is consistent with a maximum 30% CV for all areas) and TAC set-aside increase to account for full observer cost

The TAC set-aside would be increased to provide a minimum sea sampling frequency to produce a maximum 30% coefficient of variation on the estimated mean in any area. Since at low sampling frequency, the precision of estimates depends on the number of samples and the variation of the quantity being measured, a target precision level will be achieved with a constant number of trips. Access boundary (Section 4.2.1) and rotation order (Section 4.2.11) alternatives providing for higher fleet trip allocations would allow a lower sampling frequency while achieving a constant precision for bycatch estimates (see the table below).

Table 35. Predicted sampling frequency needed to achieve a 20% and 30% CV on yellowtail flounder bycatch estimates and expected sampling frequency available, assuming a \$707 daily observer cost to the vessel.

		Predicted precision					
		20% CV			30% CV		
Total trips by area		276	548	828	276	548	828
Full-time trip allocation		1	2	3	1	2	3
TAC range (mt)		1500-3700	3800-6200	6300-8700	1500-3700	3800-6200	6300-8700
Closed Area I	Target sampling frequency	19%	9%	6%	8%	4%	3%
	Predicted 1% TAC set aside	9-20%	11-19%	16-23%	9-20%	11-19%	16-23%
Closed Area II	Target sampling frequency	10%	5%	3%	5%	2%	2%
	Predicted 1% TAC set aside	9-21%	12-19%	17-23%	9-21%	12-19%	17-23%
Nantucket Lightship Area	Target sampling frequency	11%	12%	4%	5%	5%	2%
	Predicted 1% TAC set aside	11-25%	14-23%	20-28%	11-25%	14-23%	20-28%
Combined	Minimum TAC set-aside	2%	1%	1%	1%	1%	1%

Table 36. Predicted scallop landings allowance (lbs. meat weight) per trip, assuming a \$707 per day observer cost which would be fully compensated by scallop revenue. The analysis takes into account predicted LPUE, scallop price, trip duration to catch 18,000 lbs. of scallops, and the effect of the extra catch on trip duration.

	2004	2005	2006	2007
Closed Area I	1,348	1,429	1,392	1,345
Nantucket Lightship Area	1,085	1,145	1,115	1,088
Closed Area II	1,313	1,357	1,291	1,248

Rationale: A 30% CV is equivalent to the precision goals of bycatch estimate in other fisheries in the Northeast Region. As a minimum for any area, the Council believed that this level of precision is adequate for monitoring yellowtail flounder bycatch in the Georges Bank controlled access program. In areas where yellowtail flounder is less variable, higher precision is possible with a constant sampling frequency across all areas.

4.2.8.2 Enhanced sampling frequency (to achieve at a precision that is consistent with a maximum 30% CV for all areas) and TAC set-aside adjustment, with NMFS funding for the first 5% of total trips

The TAC set-aside would be increased to provide a minimum sea sampling frequency to produce a maximum 30% coefficient of variation on the estimated mean in any area. This alternative expects that

the first five percent would be funded by NMFS, if funds are available. As a result, the amount of sampling through a TAC set-aside is five percent less than the amounts in the table above.

Table 37. Predicted sampling frequency, funded by the scallop TAC set-aside, needed to achieve a 20% and 30% CV on yellowtail flounder bycatch estimates, assuming NMFS-funded sea sampling program to achieve a 5% sampling frequency.

		Predicted precision					
		20% CV			30% CV		
Full-time trip allocation		1 trip	2 trips	3 trips	1 trip	2 trips	3 trips
Closed Area I	Target sampling frequency	14%	4%	1%	3%	0%	0%
Closed Area II	Target sampling frequency	5%	0%	0%	0%	0%	0%
Nantucket Lightship Area	Target sampling frequency	6%	7%	0%	0%	0%	0%
Combined	Minimum TAC set-aside	2%	1%	1%	1%	0%	0%

Rationale : This alternative would require NMFS to fund sea sampling at a level that is equivalent to the court-ordered mandate for the multispecies fishery. NMFS has also set a five percent sampling frequency as a sampling target in the other fisheries.

4.2.8.3 Existing sampling frequency (whatever can be funded) funded with a one percent TAC set-aside (No Action)

The scallop TAC set-aside for observers would remain at one-percent and NMFS would use these funds to obtain the maximum observer coverage it would allow. According to the Amendment 10 analyses, this provides about 10-20% coverage if the possession limit allowance on observed trips is set to compensate the vessel for all of the observer cost. Higher sampling frequency and better bycatch estimates can be achieved if the possession limit allowance does not cover the entire observer cost to the vessel. Higher sampling frequency, but no change in bycatch estimate precision can be achieved if not all vessels take controlled access trips.

Rationale : This alternative is calculated to provide equal to or greater than bycatch estimates accuracy as NMFS achieves in other fisheries. In most cases, this alternative is expected to provide estimates with a 30% CV or better, and a 20% CV or better in most cases, depending on the amount of trips that can be allocated and the actual variability of the yellowtail flounder catch during the proposed access program.

4.2.9 Enforcement Provisions

4.2.9.1 Trip declaration and notification

An activity code will be incorporated into the VMS programming to indicate when a scallop vessel is on a closed area trip. A vessel may set an activation code for a closed area trip no more than the number of trips authorized for fishing within the closed area (Section 4.2.11). NMFS may trigger a closed area trip either when the vessel's VMS reports its first position within one of the closed areas or when notified by the existing VMS email capabilities that the vessel will be taking a closed area trip. To

simplify administration and enhance monitoring, NMFS may require email notification of a closed area trip prior to leaving the dock. No additional notification is required at the end of a trip, before landing.

Rationale: Enforcement must know when a vessel is or is not authorized to fish in the groundfish closed areas. The activity code would enable law enforcement to quickly check if the vessel is authorized to be in the Nantucket Lightship Area, Closed Area I, or Closed Area II. Without the activation code or some other means of authorization, it would be impossible to distinguish between a vessel that had already taken its allocated closed area trips and one that had not and is therefore authorized to fish in a groundfish closed area.

4.2.9.2 Vessel operation and landing

Vessels on a closed area trip may not fish for any species except within the open portions of Nantucket Lightship Area, Closed Area I, or Closed Area II. Vessels fishing for scallops in one of the groundfish closed areas may not enter or re-enter another groundfish closed area, except to transit an area with gear stowed in accordance with §648.81(e) of the multispecies regulations governing closed area access. Partial unloadings of the catch at more than one dealer is also prohibited.

Rationale: Circumvention of the scallop possession limit will significantly undermine the conservation goals of the proposed action. Allowing scallop fishing on closed area trips outside of closed areas would provide greater opportunity to transfer scallops at sea, thereby avoiding the scallop possession limit. The allocation of trips and the scallop possession limit are the primary management measures for controlling scallop catch and are intended to prevent the fishery from exceeding the scallop TAC.

Partial unloadings could also reduce the effectiveness of the scallop possession limit to keep landings below the TAC. Allowing landings of scallops at more than one dock or port would make it harder to track and monitor the landings from closed area trips.

4.2.9.3 More frequent polling of VMS equipment

NMFS will increase the polling frequency for all limited access scallop vessels with VMS systems (regardless of whether the vessel fishes in the groundfish closed areas) to an average of twice per hour, from the current rate of one polling per hour. This enhanced polling frequency would begin on June 15, when Closed Area II opens for scallop fishing, and terminate when the all three closed areas are no longer open for scallop fishing.

The increased polling frequency will also apply to all general category scallop vessels that apply for access to the closed areas. The increased polling frequency for these general category vessels would continue until the vessel no longer participates in the program, i.e. the end of the minimum of the 30-day declaration (see Section 4.2.13). The added costs associated with the increased messaging and associated administrative costs are to be borne by the scallop vessels with VMS systems.

Rationale: The increased polling frequency will enhance the monitoring capability to catch violators when fishing in the groundfish closed areas. Since the average would be a polling every 30 minutes, there would be a 50% chance of detection for entries into the closed areas of more than 15 minutes and a 100 percent chance of detection for entries into the closed areas for longer than 30 minutes. The Council believes this will be sufficient to catch violators that could be transferring scallops at sea to circumvent the scallop possession limit.

The original intent of the scallop VMS program was to determine when a vessel was at sea or at the dock, to be able to deduct the correct number of days-at-sea from a vessel's annual allocation. For this new purpose, more frequent polling is needed. It is also necessary to increase the polling frequency for scallop vessels that are not on a closed area trip, since the purpose of the provision is to prevent transfers at sea to other scallop vessels. It is not necessary to monitor non-scallop vessels, because it would be highly unusual for a vessel to be unloading 18,000 lbs. of scallops without a dredge onboard.

4.2.10 Reporting Requirements

The reporting requirements that are currently in effect for controlled access areas would continue, consistent with Amendment 10 regulations.

4.2.10.1 Vessel monitoring systems (VMS)

All scallop vessels that fish in the re-opened closed areas will be required to have a functional VMS onboard. In addition to the current VMS-based reporting requirements, the Regional Administrator may require vessels that fish for scallops in the closed areas to make daily reports on the haul weight of scallops, yellowtail flounder, windowpane flounder, winter flounder, barndoor skates, and monkfish; the total number of tows since the last daily report; and the area fished. This daily report must be made via the e-mail messaging capability built into the VMS units.

Rationale : The additional reporting requirements are necessary for NMFS to monitor the fishery and make in-season adjustments to the trip allocations or discontinue the closed area scallop fishery. Currently all full and part-time vessels are required to have a VMS onboard, and all limited access vessels are required to have VMS when scallop fishing in the Hudson Canyon Area. Unlike previous actions where vessels had a choice of whether to use DAS in controlled access or open areas, vessels with occasional scallop permits would need to install and operate VMS to fish in the controlled access areas to use the controlled access allocations. Under Amendment 10 regulations, trading controlled access for open area DAS is not allowed.

4.2.10.2 Vessel Trip Reports (VTR)

In addition to the information that NMFS currently requires scallop vessels to submit on Vessel Trip Reports (VTR), the Regional Administrator is encouraged to require vessels on closed area trips to report the following detailed information:

- Start and end time of each tow
- Duration of tow
- Latitude and longitude coordinates of each tow
- Depth of tow
- A description of the gear used
- The number of crew members aboard the vessel
- Subjective description of the habitat they are dredging
- An estimated amount and size of scallops caught on each tow
- Characterization (amount, size, and condition) of all bycatch for each species.

Rationale : More detailed information is needed to evaluate future area rotation strategies and the effects they will have on scallops, bycatch species, and habitat. There is very little information to assess how a full-scale commercial fishery will operate under a condition that is representative of a rebuilt scallop resource. Fishing strategies will vary between vessels, which may have a significant bearing on bycatch

and habitat. More descriptive information at a greater geographic scale would enable the Council to fine tune access programs in future framework adjustments to minimize bycatch while improving scallop yield and benefits.

4.2.11 Mechanical Rotation Alternatives with Controlled Access Trip and DAS Allocations for Limited Access Scallop Vessels

4.2.11.1 Amendment 10 mechanical rotation and fishing mortality targets

Mechanical rotation of areas available for scallop fishing, subject to constraints on adverse habitat effects, groundfish bycatch, and gear conflict (see Section 4.2.2), would proceed according to the schedule and mortality targets in the table below. Closed Area I and the Nantucket Lightship Area, having the oldest large scallops would be accessed during the 2004 fishing year with an elevated mortality target, followed by Closed Area II access during the 2005-2007 fishing years.

Table 38. Fishing mortality targets for the mechanical area rotation strategy, proposed in Amendment 10. $F=0.2$ is approximately the continuous (i.e. every year) fishing mortality that maximizes yield-per-recruit, or F_{max} .

Fishing year	Closed Area I	Closed Area II	Nantucket Lightship Area
2004	0.4	Closed	0.4
2005	Closed	0.2	Closed
2006	Closed	0.2	Closed
2007	Closed	0.2	Closed

TACs and effort allocations vary by access boundary alternative (Section 4.2.2) and by year, due to the effects of fishing mortality in preceding years. The allocations, assuming a 5% TAC set aside (1% to fund observers; 2% to fund research and cooperative scallop surveys; and 2% for general category fishing) are provided for the four area boundary alternatives in Table 39 to

Table 42.

Rationale: Earlier analysis in Amendment 10 using 2002 survey data indicated that benefits would be maximized by fishing more intensely in the Nantucket Lightship Area and Closed Area I as early as possible and delaying access and mortality in Closed Area II. Thus, Amendment 10 anticipated opening Closed Area I and the Nantucket Lightship Area in 2004, with a fishing mortality of 0.4 (about twice F_{max}). Large scallops in Closed Area I and especially Nantucket Lightship Area The higher fishing mortality would reap the benefits of high meat yields in large scallops, before the populations began experiencing reduced biomass through natural mortality and declining meat quality³².

At the same time, the large year class of small scallops observed by the 2000 resource survey would be given another year to grow, increasing meat yield and yield-per-recruit. This year class was among the highest on record for Georges Bank and was also observed in the 2001 and 2002 surveys.

³² Meat quality declines with advancing age, changing in color and consistency to affect marketability and shucking.

Amendment 10 estimated the net benefits of this rotation plan to be higher than other reasonable alternatives and the Council chose this option based on the existing data and analyses.

According to the rotation plan and Amendment 10, this schedule would repeat in a four-year cycle, resulting in a 0.1 time-averaged fishing mortality rate for Closed Area I and Nantucket Lightship Area, which is ½ of the F_{max} estimate. Closed Area II would be fished at mortality target of 0.2 for three out of four years, giving a time-averaged mortality target of 0.15, or about ¾th of F_{max} .

Table 39. TAC and allocation estimates for access boundary alternative 1 (Section 4.2.2.1), with a 5% TAC set-aside³³, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation system).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area I	F = 0.4	2,131 (4.7)	1	7 (84)	2 (24)	1 (12)
	Nantucket Lightship Area	F = 0.4	6,151 (13.6)	2			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area II	F = 0.2	4,219 (9.3)	2	5 (60)	2 (24)	1 (12)
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ³⁴	Closed Area II	F = 0.2	3,648 (8.0)	1	1 (12)	1 (12)	1 (12)
2007	Closed Area II	F = 0.2	3,076 (6.8)	1	1 (12)	1 (12)	1 (12)

³³ 1% for observers; 2% for research; 2% for general category fishing.

³⁴ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 43).

Table 40. TAC and allocation estimates for access boundary alternative 2 (Section 4.2.2.2), with a 5% TAC set-aside³⁵, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area I	F = 0.4	2,251 (5.0)	1	8 (96)	3 (36)	1 (12)
	Nantucket Lightship Area	F = 0.4	6,389 (14.1)	3			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area II	F = 0.2	4,291 (9.5)	2	5 (60)	2 (24)	1 (12)
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ³⁶	Closed Area II	F = 0.2	3,710 (8.2)	1	1 (12)	1 (12)	1 (12)
2007	Closed Area II	F = 0.2	3,129 (6.9)	1	1 (12)	1 (12)	1 (12)

³⁵ 1% for observers; 2% for research; 2% for general category fishing.

³⁶ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see

Table 43).

Table 41. TAC and allocation estimates for access boundary alternative 3 (Section 4.2.2.3), with a 5% TAC set-aside³⁷, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area I	F = 0.4	821 (1.8)	0	6 (72)	2 (24)	1 (12)
	Nantucket Lightship Area	F = 0.4	6,151 (13.6)	2			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area II	F = 0.2	4,219 (9.3)	2	5 (60)	2 (24)	1 (12)
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ³⁸	Closed Area II	F = 0.2	3,648 (8.0)	1	1 (12)	1 (12)	1 (12)
2007	Closed Area II	F = 0.2	3,076 (6.8)	1	1 (12)	1 (12)	1 (12)

Table 42. TAC and allocation estimates for access boundary alternative 4 (Section 4.2.2.4), with a 5% TAC set-aside³⁹, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area I	F = 0.4	2,251 (5.0)	1	8 (96)	3 (36)	1 (12)
	Nantucket Lightship Area	F = 0.4	6,389 (14.1)	3			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area II	F = 0.2	4,219 (9.3)	2	5 (60)	2 (24)	1 (12)
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ⁴⁰	Closed Area II	F = 0.2	3,648 (8.0)	1	1 (12)	1 (12)	1 (12)
2007	Closed Area II	F = 0.2	3,076 (6.8)	1	1 (12)	1 (12)	1 (12)

³⁷ 1% for observers; 2% for research; 2% for general category fishing.

³⁸ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 42).

³⁹ 1% for observers; 2% for research; 2% for general category fishing.

⁴⁰ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 42).

Table 43. Open area DAS allocations (Source: Amendment 10)

Scallop fishing year	Amendment 10 with Georges Bank controlled access	Amendment 10 without Georges Bank controlled access
2004	42	62
2005	40	117
2006	67	152
2007	67	152

4.2.11.2 Alternative mechanical rotation strategy and fishing mortality targets

An alternative mechanical rotation strategy would access the Nantucket Lightship Area and Closed Area II in 2004, with a three-year rotation cycle that would open access to scallops in two of three groundfish closed areas each year. Therefore access to Closed Area II would occur earlier than the alternative above and access to Closed Area I would occur later than the alternative above. In 2005, the Nantucket Lightship Area would close, while Closed Areas I and II would become accessible for scallop fishing. In 2006, Closed Area II would close, while the Nantucket Lightship Area and Closed Area I would become accessible. This three-year cycle would restart in 2007. The order of rotation and the target mortality rates are given in the table below.

Table 44. Fishing mortality targets for an alternative mechanical area rotation strategy, which maximizes benefits, based on 2003 survey data. $F=0.2$ is approximately the continuous (i.e. every year) fishing mortality that maximizes yield-per-recruit, or F_{max} .

Fishing year	Closed Area I	Closed Area II	Nantucket Lightship Area
2004	Closed	0.2	0.2
2005	0.2	0.2	Closed
2006	0.2	Closed	0.2
2007	Same as 2004	Same as 2004	Same as 2004

TACs and effort allocations vary by access boundary alternative (Section 4.2.2) and by year, due to the effects of fishing mortality in preceding years. The allocations, assuming a 5% TAC set aside (1% to fund observers; 2% to fund research and cooperative scallop surveys; and 2% for general category fishing) are provided for the four area boundary alternatives in Table 45 to Table 48.

Rationale: Survey results for 2003, which were unavailable during the development of Final Amendment 10, indicated that scallop resource conditions in Closed Area II had changed. Biomass estimates from the 2003 surveys were about 40% less than projected by Amendment 10, using 2002 survey data. While some of the change could be attributed to sampling error in a random, stratified survey; the PDT determined that this was a significant change especially since the closed area is over-sampled by non-random survey tows. In addition, the surveys detected areas with anomalously high concentrations of predatory starfish.

Since the much larger biomass of scallops in Closed Area II appeared to be vulnerable to predation and they are expected to be nearly the same size meats as in the other two access areas (13.4 meats per pound, vs. 15.0 in Closed Area I and 10.2 in the Nantucket Lightship Area), the PDT thought

that this warranted a shift in the preferred mechanical rotation strategy. Adding to the PDT recommendation, it considered the possible problem of resolving the conflicting habitat closure boundaries (see Section 4.2.3), the developing plan for a yellowtail flounder SAP in Closed Area II, and the potential problem with yellowtail flounder bycatch in the Nantucket Lightship Area with a 0.4 fishing mortality rate.

Furthermore, the lower Closed Area II biomass would provide lower TACs in 2005-2007 than Amendment 10 anticipated, thus out of balance with the expected landings in 2004. The alternative mechanical rotation strategy in this alternative is expected to even out the annual allocations and provide higher net benefits, while helping to keep yellowtail flounder mortality below acceptable levels (see Section 4.2.5).

Table 45. TAC and allocation estimates for access boundary alternative 1 (Section 4.2.2.1), with a 5% TAC set-aside⁴¹, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area II	F = 0.2	3,808 (8.4)	2	7 (84)	2 (24)	1 (12)
	Nantucket Lightship Area		3,371 (7.4)	1			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area I	F = 0.2	1,393 (3.1)	1	5 (60)	2 (24)	1 (12)
	Closed Area II		3,492 (7.7)	1			
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ⁴²	Closed Area I	F = 0.2	1,213 (2.7)	0	1 (12)	1 (12)	1 (12)
	Nantucket Lightship Area		2,968 (6.5)	1			
2007	Closed Area II	F = 0.2	3,136 (6.9)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		2,486 (5.5)	1			

⁴¹ 1% for observers; 2% for research; 2% for general category fishing.

⁴² Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see

Table 43).

Table 46. TAC and allocation estimates for access boundary alternative 2 (Section 4.2.2.2) with a 5% TAC set-aside⁴³, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area II	F = 0.2	3,873 (8.5)	2	7 (84)	2 (24)	1 (12)
	Nantucket Lightship Area		3,501 (7.7)	1			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area I	F = 0.2	1,471 (3.2)	1	5 (60)	2 (24)	1 (12)
	Closed Area II		3,552 (7.8)	1			
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ⁴⁴	Closed Area I	F = 0.2	1,281 (2.8)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		3,083 (6.8)	1			
2007	Closed Area II	F = 0.2	3,190 (7.0)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		2,582 (5.7)	1			

⁴³ 1% for observers; 2% for research; 2% for general category fishing.

⁴⁴ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 42).

Table 47. TAC and allocation estimates for access boundary alternative 3 (Section 4.2.2.3), with a 5% TAC set-aside⁴⁵, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area II	F = 0.2	3,808 (8.4)	2	7 (84)	2 (24)	1 (12)
	Nantucket Lightship Area		3,371 (7.4)	1			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area I	F = 0.2	537 (1.2)	0	4 (48)	1 (12)	1 (12)
	Closed Area II		3,492 (7.7)	1			
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ⁴⁶	Closed Area I	F = 0.2	468 (1.0)	0	1 (12)	1 (12)	1 (12)
	Nantucket Lightship Area		2,968 (6.5)	1			
2007	Closed Area II	F = 0.2	3,136 (6.9)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		2,486 (5.5)	1			

⁴⁵ 1% for observers; 2% for research; 2% for general category fishing.

⁴⁶ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 42).

Table 48. TAC and allocation estimates for access boundary alternative 4 (Section 4.2.2.4), with a 5% TAC set-aside⁴⁷, and an 18,000 lb. scallop possession limit for full-time, part-time, and occasional vessels (Amendment 10 allocation strategy).

Year	Access areas open	Fishing mortality target	Target scallop TAC, mt (million lbs.)	Maximum trips per vessel	Equivalent DAS allocation Trips (DAS)		
					Full-time	Part-time	Occasional
2004	Closed Area II	F = 0.2	3,808 (8.4)	2	7 (84)	2 (24)	1 (12)
	Nantucket Lightship Area		3,501 (7.7)	1			
	Hudson Canyon Area	F = 0.4	8,523 (18.8)	4			
2005	Closed Area I	F = 0.2	1,471 (3.2)	1	5 (60)	2 (24)	1 (12)
	Closed Area II		3,492 (7.7)	1			
	Hudson Canyon Area	F = 0.48	6,784 (15.0)	3			
2006 ⁴⁸	Closed Area I	F = 0.2	1,281 (2.8)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		3,083 (6.8)	1			
2007	Closed Area II	F = 0.2	3,136 (6.9)	1	2 (24)	1 (12)	1 (12)
	Nantucket Lightship Area		2,582 (5.7)	1			

4.2.12 Trip and DAS Allocations for Part-Time and Occasional Vessels

4.2.12.1 Trips rounded down to the nearest whole number with equal scallop possession limits for all categories and areas; no less than one controlled access trip allocated each vessel

Controlled access trips for part-time vessels would be 40% of the number of pooled (total) controlled access trips allocated to full-time vessels. Allocations for occasional vessels would be 1/12th of the amount of pooled (total) controlled access trips for full-time vessels. In no case would there be less than one controlled access trip allocated to a vessel with a limited access permit, as long as there are one or more areas open for controlled access fishing. All controlled access trips would have the same scallop possession limit, regardless of the vessel's type of limited access scallop permit. Example allocations for some alternatives are given in the table below.

⁴⁷ 1% for observers; 2% for research; 2% for general category fishing.

⁴⁸ Hudson Canyon Area opens as a regular scallop fishing area, according to the Amendment 10 schedule. Open area days therefore increase (see Table 42).

Table 49. Estimated total controlled access allocations for limited access scallop vessels, assuming access boundary alternative 4 (Section 4.2.2.4), using the Amendment 10 method for allocating controlled access trips and DAS to part-time and occasional limited access vessels.

Year	Permit category	Amendment 10 rotation; Alternative 4 access (Table 42)			Alternative mechanical rotation; Alternative 4 access (Table 48)		
		Trips	DAS/trip	Scallop possession limit	Trips	DAS/trip	Scallop possession limit
2004	Full-time	8	12	18,000	7	12	18,000
	Part-time	3	12	18,000	2	12	18,000
	Occasional	1	12	18,000	1	12	18,000
2005	Full-time	5	12	18,000	5	12	18,000
	Part-time	2	12	18,000	2	12	18,000
	Occasional	1	12	18,000	1	12	18,000
2006	Full-time	1	12	18,000	2	12	18,000
	Part-time	1	12	18,000	1	12	18,000
	Occasional	1	12	18,000	1	12	18,000
2007	Full-time	1	12	18,000	2	12	18,000
	Part-time	1	12	18,000	1	12	18,000
	Occasional	1	12	18,000	1	12	18,000

Rationale: The controlled access allocation strategy adopted by the Council in Amendment 10. It reduces the administrative and enforcement burden while enabling trading among limited access vessels, because all scallop possession limits are equal and all trips are charged the same number of DAS. No limited access vessel is allocated less than a 12-day trip with a possession limit equal to what applies to a full-time vessel, set by Amendment 10 at 18,000 lbs. meat weight.

4.2.12.2 Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)

Scallop possession limits would be adjusted, so that part-time vessels would receive controlled access DAS allocations that are exactly 40% of a full-time allocation, just as they did before Amendment 10. Similarly occasional vessels would receive 1/12th of a full-time allocation. Coincidentally, it also means that the maximum potential scallop landings on controlled access trips would have the same ratios.

Under this alternative, limited access scallop vessels would be able to trade controlled access trips only with vessels having the same types of allocations. Full-time vessels would trade only with another full-time vessel, regardless of the type of permit (dredge, small dredge, or trawl authorized). Trades between part-time and occasional vessels would be similarly restricted.

Rationale: This alternative would correct a perceived inequity associated with controlled access allocations in Amendment 10 that could work against part-time vessels and favors occasional vessels. It

would restore the allocation ratio to 40% and 1/12th of a full-time allocation, but require enforcement of scallop possession limits that differ by permit class.

If this alternative part-time and occasional permit allocation strategy is chosen, restricting trades between permit classes would be necessary to avoid an unenforceable situation. Under this alternative, part-time and occasional vessels could have scallop possession limits that are different than those for full-time vessels. While by itself this would not be a problem, it would otherwise require a close tracking and monitoring trips to ensure compliance with a scallop possession limit as originally assigned to another vessel in a different permit category. Thus a full-time vessel may, for example, have different scallop possession limits

Table 50. Estimated total controlled access allocations for limited access scallop vessels, assuming access boundary alternative 4 (Section 4.2.2.4), using an alternative method for allocating controlled access trips and DAS to part-time and occasional limited access vessels which the DAS and potential scallop catch are 40% and 1/12th of the full-time allocations, respectively.

Year	Permit category	Amendment 10 rotation; Alternative 4 access			Alternative mechanical rotation; Alternative 4 access		
		Trips	DAS/trip	Scallop possession limit	Trips	DAS/trip	Scallop possession limit
2004	Full-time	8	12	18,000	7	12	18,000
	Part-time	4	9.6	14,400	3	11.2	16,800
	Occasional	1	8.0	12,000	1	7.0	10,500
2005	Full-time	5	12	18,000	5	12	18,000
	Part-time	2	12.0	18,000	2	12.0	18,000
	Occasional	1	5.0	7,500	1	5.0	7,500
2006	Full-time	1	12	18,000	2	12	18,000
	Part-time	1	4.8	7,200	1	9.6	14,400
	Occasional	1	1.0	1,500	1	2.0	3,000
2007	Full-time	1	12	18,000	2	12	18,000
	Part-time	1	4.8	7,200	1	9.6	14,400
	Occasional	1	1.0	1,500	1	2.0	3,000

Table 51. Total trip allocations and estimated DAS use (fishing time) for part-time and occasional controlled access DAS allocations, assuming area access alternative 4 (Section 4.2.2.4) and alternative mechanical rotation (Section 4.2.11.2).

Year	Maximum total controlled access trips		Maximum controlled access DAS use	
	Amendment 10 allocation strategy	Alternative allocation strategy	Amendment 10 allocation strategy	Alternative allocation strategy
2004	1,891	1,918	13,289	13,479
2005	1,367	1,367	9,803	9,803
2006	554	554	3,418	3,418
2007	554	554	3,286	3,286

4.2.13 Scallop Fishing In Controlled Access Areas By Vessels Having General Category Permits

4.2.13.1 No access (No Action)

Vessels with general category permits could not fish with a scallop dredge in the proposed access areas. No change in the groundfish exemption regulations would be required.

Rationale : The Multispecies FMP regulates fishing activity with small mesh to limit mortality on small groundfish by vessels that are not fishing a groundfish or scallop DAS.

4.2.13.2 Access with enhanced reporting and a TAC set-aside

Vessels having general category scallop permits would be able to fish with a 10 ½ foot or less dredge for scallops in the access areas, subject to area specific limits on the number of trips by the fleet. Vessels with general category permits that fish in the access areas with dredges must comply with the regulations listed below. Vessels would be able to retain and land up to 400 lbs. of scallop meats or 50 US bushels of in-shell scallops, but would not be able to retain any regulated multispecies. Partial or full compensation for observer costs will be granted by increasing the scallop possession limit for a general category vessel to cover the observer cost. Trips may exceed one day in length, but the landings may not exceed 400 lbs., plus the observer allowance determined by the Regional Administrator, if applicable.

The small mesh exemption regulations would be adjusted to allow this fishing activity as long as the fleet had not used all available trips. The number of trips will be calculated for each area, dividing two percent of its scallop TAC by 400 lbs. to determine the maximum number of trips that vessels can take in an access area during the scallop fishing year. Boundaries (Section 4.2.2) and seasons (Section 4.2.7) will be the same as those that apply to limited access vessels. Yellowtail flounder bycatch will be monitored by mandatory reports and observers and will count against the overall yellowtail flounder TACs for each stock area (Section 4.2.11).

The following requirements will also apply to vessels with general category permits when using dredges to target scallops in the access areas:

- VMS (Section 4.2.10.1)
- Zero groundfish possession limit
- Observers funded through the TAC set-aside (Section 4.2.8), with a target sampling frequency that applies to limited access scallop vessels.
- Trip declaration (Section 4.2.9.1)
- Reporting requirements (Section 4.2.10), including twice hourly position polling.

Rationale : Vessels with general category scallop permits are prevented from scallop fishing when an area closes to protect small scallops or for other fishery management reasons. Allowing these vessels to participate in the access programs would allow these fishermen to benefit from the results of the closure, like a limited access scallop vessels will. Equivalent reporting requirements and monitoring is needed to administer the proposed action and control mortality and impacts. A two-percent set-aside exceeds the scallop landings by vessels with general category permits during 1998 to 2002, which the Council therefore believes is an equitable or even generous allocation. A zero possession limit is needed because an equivalent groundfish possession limit (i.e. 400/18,000 x 1,000) would be an insignificant 22 lbs.

4.3 Considered and rejected alternatives

The following potential alternatives were discussed and considered for the framework adjustment, but the Council decided that they did not achieve the framework's objectives. They were therefore not further considered or analyzed in the Environmental Assessment (Section 6.0).

4.3.1 Change DAS allocations and/or adjust other scallop management measures for scallop fishing in open areas or the Hudson Canyon Area

DAS and trip allocations in Amendment 10 would be changed.

Rationale for rejection: This alternative would change DAS and trip allocations in additional areas, outside the Georges Bank controlled access areas described in Section 4.2.2. No new information indicates that a change is presently needed to achieve optimum yield.

4.3.2 Open all Georges Bank groundfish closed areas to scallop fishing

All areas would open to some form of scallop fishing.

Rationale for rejection: This alternative is inconsistent with the habitat closures in both Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP. It is also inconsistent with existing management policy for the cod HAPC in the Multispecies FMP.

4.3.3 Re-evaluate and revise EFH and EFH conservation measures

EFH would be redefined and/or the EFH conservation measures in Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP would be reconsidered and possibly revised.

Rationale for rejection: The Council recently analyzed and chose habitat conservation measures in Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP, and no new information indicates that a change is presently needed. Additionally, the Council has begun development of a comprehensive Omnibus Amendment to consider revising EFH and new ways to achieve EFH conservation goals.

4.3.4 Other habitat boundaries, or different combinations of habitat boundary alternatives, possibly with a buffer around the HAPC for cod

Controlled access scallop fishing would be allowed in other area boundaries defined in the framework, possibly by altering the combination of boundaries between areas. One recommendation included combining the Alternative 2 (Section 4.2.2.2) boundary for the Nantucket Lightship Area, Alternative 3 (Section 4.2.2.3) boundary for Closed Area I, and Alternative 1 (Section 4.2.2.1) boundary for Closed Area II. In addition, the framework would establish a 10 nm buffer around the cod HAPC, where scallop fishing would be prohibited.

Rationale : The Council rejected this alternative because it would be inconsistent with Alternative 10b in Amendment 13 to the Multispecies FMP. It would also redefine habitat closures, which is outside the scope of the framework adjustment.

4.3.5 TACs for finfish stocks other than yellowtail flounder

TACs for other groundfish or finfish species would apply, either to be managed as a “hard” or “soft” TAC.

Rationale : Projected catches of other species (except for mf) were low and were low in comparison with a 10% TAC allocation for groundfish species. Monkfish stocks are recovering and the FMP governs the possession of monkfish on limited access scallop trips, so additional restrictions for monkfish were unnecessary.

4.3.6 Target TACs for yellowtail flounder

The Council would set separate “soft” or target TACs for Georges Bank and Southern New England yellowtail flounder stocks, which will be compared to the estimated total catches on controlled access trips in the groundfish closed areas. Instead of shutting down access, the catches would be monitored and adjustments made in subsequent years for overages. Alternative approaches could reserve trips to be released if the observed catches on trips during the year indicated that they could be released without exceeding the target yellowtail flounder TACs.

Rationale : The Council rejected this alternative, because a satisfactory way for managing the bycatch under a soft TAC approach could not be developed.

5.0 DESCRIPTION OF AFFECTED ENVIRONMENT

This section includes descriptions of biological, physical, economic, and social features that are likely to be affected by the alternatives, focusing on features in the Georges Bank groundfish closed areas. Broader descriptions of these features that coincide or are correlated with scallop management were presented in the FSEIS for Amendment 10 (NEFMC 2003).

5.1 *Biological Environment*

5.1.1 Scallops

The FSEIS for Framework Adjustment 14 and Amendment 10, and the EA for Framework Adjustment 15 compare and contrast the scallop resource history inside and outside of the closed areas. These areas include the areas proposed by access in this framework adjustment. A previous stock assessment (NEFSC 1999) furthermore examined the potential differences of recruitment within these areas and the potential effect of spawning biomass in the areas on recruitment elsewhere.

Scallop growth and meat yield is generally higher on the shallow portions of Georges Bank than elsewhere. These productive areas include the three proposed access areas as well as the cod HAPC and adjacent areas. Food supply is often very good, enhanced by clear water and moderate water movement around the bank. If natural mortality is the same as in other areas, these effects on scallop growth and meat yield increase yield-per-recruit, making the areas productive for sea scallops even though recruitment here is historically unremarkable.

On the other hand, scallop recruitment that was observed in the 2000 survey was exceptional. At the time, this year class was the highest observed in the 23-year survey time series. Subsequent sampling of this year class has suggested that the size of this year class is less than had been previously thought, but it remains among the highest on record. The cause of this strong year class is unknown, because it occurred before the large increases in scallop biomass in the Georges Bank areas and after fishing occurred there during 1999 and 2000. Year class strength since 2000 in this and other areas of the Georges Bank region have been below average, despite high spawning stock biomass.

The scallops in the southern part of Closed Area II have grown to optimum size, between 100 and 130 mm shell height. More importantly however is that the 2003 resource surveys observed higher clapper ratios (an indicator of natural mortality) and higher abundance of predatory starfish. It is not known whether the decline in biomass, compared with previous projections, is due to a potential increase in natural mortality and predation, or a result from sampling variability. If due to natural mortality and predation, potential yield could decline as the biomass growth of this large year class slows.

Scallops in the proposed access areas for Closed Area I and the Nantucket Lightship Area are primarily from the large scallops that existed in 2000, when the areas were last fished. Due to some management effects, which are explained in Section 3.2.1.2, the fishery did not land the TACs that were associated with the target fishing mortality rates. As a result, many of the scallops in these areas are between 130 and 150 mm shell-height, growth has slowed dramatically, and little increases in biomass would occur if unfished.

5.1.2 Groundfish

The groundfish closed areas were originally established to reduce the effects of fishing on spawning cod and haddock, in particular Closed Areas I and II. Peak spawning activity occurs in February to April, coinciding with the original seasonal closures. After spawning, these fish often disperse to other areas during their annual migration. 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 proposed access areas in Closed Areas I and II. Unlike spawning cod and haddock, however, yellowtail flounder tend to remain 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 FSEIS for Amendment 13 to the Multispecies FMP.

5.1.3 Other species

The biological characteristics of other species found in the groundfish closed areas and the proposed access areas can be found in the Skate FMP and Monkfish FMP EIS documents. In general, several skate species are often found in the proposed access areas, including winter, little, and barndoor skate. The Skate FMP identified the conservation associated with the groundfish closed areas to be an important component of limiting mortality on skates, which is a major reason why a skate baseline review (Section 7.1.4) was initiated for this framework adjustment. Although monkfish inhabit and are caught in the groundfish closed areas, the center of the monkfish distribution is in the Gulf of Maine to the north, and in deeper waters off Southern New England to the west.

5.2 *Physical Environment*

A description of the physical characteristics of the Georges Bank closed areas was included in the FSEIS for Amendment 7 to the Multispecies FMP and in the EFH assessment in Amendment 13 to the Multispecies FMP. In general, the areas are characterized by a clockwise gyre that often retains larvae in the productive zone around Georges Bank. The access areas include shallower areas of Georges Bank with a mix of bottom substrates, primarily including sand and gravelly sand. These areas do not include the more complex habitats and harder substrates found in the southern part of Closed Area I and in the northern part of Closed Area II. Some of these more complex areas include cobble and boulder substrates that are believed to be essential for early growth and survival of cod and other groundfish species. More details about these aspects are provided in the section below.

Scallop recruitment is influenced by the retention of pelagic scallop larvae in the Georges Bank water circulation pattern, temperature, and substrates when the larvae settle as spat. Scallop larvae are difficult to identify in field samples and routine monitoring does not occur. Biologists believe however that scallop larvae are often retained in the Georges Bank water circulation pattern, with some leakage of scallop larvae to the west of the Great South Channel (NEFSC 1999). Heaviest recruitment appears to occur in the Great South Channel, along the northern edge of Georges Bank that passes through the northern part of Closed Area II and the cod HAPC, and along the southeastern part of Georges Bank (partially overlapping the southern part of Closed Area II). A comparison of the biomass trends within open and closed areas in the Georges Bank region shows little evidence of remarkably strong year classes within the closed areas, unlike the Hudson Canyon and VA/NC Areas in the Mid-Atlantic region (NEFMC 2000).

5.3 Habitat

5.3.1 Background

A number of authors have reviewed, to varying extents, existing scientific literature on the effects of fishing on habitat (e.g., Auster et al. 1996, Cappelletti et al. 1998, Collie 1998, Jennings and Kaiser 1998, Rogers et al. 1998, Auster and Langton 1999, Hall 1999, Collie et al. 2000, Lindeboom and de Groot 2000, Barnette 2001, National Research Council 2002). The following summary of the conclusions reached by these authors is extracted from a recent NOAA report (Johnson 2002).

A number of review papers have focused specifically on the physical effects of bottom trawls. In Europe, an ICES working committee (ICES 1973) concluded that otter trawls, beam trawls and dredges all have similar effects on the seabed, but the magnitude of disturbance increases from shrimp to beam trawls with tickler and stone guards, to Rapido trawls, to mollusc (e.g., scallop) dredges. Kaiser et al. (1996) and Collie et al. (2000) state that, because beam trawls are used almost exclusively in areas that are adapted to frequent wave/tidal action, they are less likely to adversely affect bottom habitats. As mentioned elsewhere in this DEIS, scallop dredges used in Europe and Australia are designed differently than the sweep dredge used in the Northeast region of the U.S. Specifically, they have a row of teeth that penetrate several inches into the bottom and therefore have a greater impact on benthic habitats than the sweep dredge. Beam trawls and Rapido trawls are not used in the U.S. groundfish fishery.

Auster et al. (1996) conducted three studies of mobile fishing gear in the Gulf of Maine and concluded that mobile fishing gear alters the seafloor and reduces habitat complexity, sedimentary structures, and emergent epifauna. Collie (1998) reviewed studies from New England and concluded that hard bottom benthic habitats (e.g., boulders and gravel pavement) experience significant impacts of mobile bottom-tending fishing gear, while mobile sand habitats are less vulnerable. Jennings and Kaiser (1998) concluded that fishing activities lead to changes in the structure of marine habitats and influence the diversity, composition, biomass, and productivity of the associated biota. They further concluded that these effects vary according to gears used, habitats fished, and the magnitude of natural disturbance, but tend to increase with depth and the stability of the substrate. Auster and Langton (1999) reviewed 22 studies from a wide geographic range and concluded that mobile fishing gear reduces habitat complexity by: (1) directly removing epifauna or damaging epifauna leading to mortality, (2) smoothing sedimentary bedforms and reducing bottom roughness, and (3) removing taxa which produce structure (i.e., taxa which produce burrows and pits). They also concluded that for fixed gear, the area impacted per unit effort is smaller than for mobile gear, but the types of damage to emergent benthos appear to be similar (but not necessarily equivalent per unit effort).

Collie et al. (2000) analyzed 39 published studies to compile and evaluate current findings regarding fishing gear effects on different types of benthic habitat. They found: (1) 89% of the studies were undertaken at depths less than 60 m; (2) otter trawl gear is the most frequently studied; (3) most studies have been done in Northern Europe and Eastern North America. The authors reached several conclusions regarding the effects of fishing: (1) intertidal dredging and scallop dredging have the greatest initial effects on benthic biota, followed by otter trawling and then beam trawling (although beam trawling studies were conducted in dynamic sandy areas, where effects might be less apparent); (2) fauna in stable gravel, mud and biogenic habitats are more adversely affected than those in less consolidated coarse sediments; (3) recovery appears most rapid in less physically stable habitats (inhabited generally by more opportunistic species); (4) we may accurately predict recovery rates for small-bodied taxa, but communities often contain one or two long-lived, vulnerable species; (5) large-bodied organisms are more prevalent before trawling; and (6) the mean initial response to fishing impacts is negative (55% reduction of individual taxa). Based on these findings, the authors suggested that the scientific community abandon

short-term small-scale experiments and undertake larger scale experiments that mimic the timing and frequency of disturbance typical of commercial fishing activities.

A working committee of the International Council for the Exploration of the Seas (ICES) issued, in November 2000, a report on the “Effects of Different Types of Fisheries on North Sea and Irish Sea Benthic Ecosystems.” This report (ICES 2000) was a summary of findings based on a comprehensive report of the same title edited by Lindeboom and de Groot (1998).

Direct habitat effects of fishing have also been summarized by Johnson (2002) in four categories: alteration of physical structure, sediment suspension, chemical modifications, and benthic community changes.

For the purposes of this evaluation, recovery refers to the return of the seafloor or benthic communities to pre-disturbance conditions and was evaluated as the time required for this to happen.

5.3.2 Types of Gear Effects

Alteration of Physical Structure

Physical effects of fishing gear can include scraping, plowing, burial of mounds, smoothing of sand ripples, removal of stones or dragging and turning of boulders, removal of taxa that produce structure, and removal or shredding of submerged aquatic vegetation (Fonseca et al. 1984, Messieh et al. 1991, Black and Parry 1994, Gordon et al. 1998, Kaiser et al. 1998, Lindeboom and de Groot 1998, Schwinghamer et al. 1998, Auster and Langton 1999, Kaiser et al. 1999, Ardizzone et al. 2000). These physical alterations reduce the heterogeneity of the sediment surface, alter the texture of the sediments, and reduce the structure available to biota as habitat. As mobile gear is dragged across the seafloor, parts of some gears can penetrate up to 5-30 cm into the substrate under usual fishing conditions, and likely to greater depths under unusual conditions (Drew and Larsen 1994). This action can leave tracks or even trenches in the seafloor, depending on the sediment type. It is unknown whether or to what extent these human-made features might compensate for the sediment smoothing actions of the gear.

Sediment Suspension

Re-suspension of sediments occurs as fishing gear is dragged along the seafloor. Effects of sediment suspension can include reduction of light available for photosynthetic organisms, burial of benthic biota, smothering of spawning areas, and negative effects on feeding and metabolic rates of organisms. If re-suspension occurs over a large enough area it can actually cause large scale re-distribution of sediments (Messieh et al. 1991, Black and Parry 1994). Re-suspension may also have important implications for nutrient budgets due to burial of fresh organic matter and exposure of deep anaerobic sediment, upward flux of dissolved nutrients in porewater, and change in metabolism of benthic infauna (Mayer et al. 1991, Pilskalns et al. 1998).

Effects of sediment re-suspension are site-specific and depend on sediment grain size and type, water depth, hydrological conditions, faunal influences, and water mass size and configuration (Hayes et al. 1984, LaSalle 1990, Barnes et al. 1991, Coen 1995). Effects are likely more significant in waters that are normally clear compared with areas that are already highly perturbed by physical forces (Kaiser 2000). Schoellhamer (1996) concluded that re-suspension by natural mechanisms in a shallow estuary in west-central Florida was less frequent and of smaller magnitude than anthropogenic mechanisms (e.g., fishing) and that sediments disturbed by fishing were more susceptible to re-suspension by tidal currents. Modeling by Churchill (1989) revealed that re-suspension by trawling is the primary source of suspended

sediment over the outer continental shelf of the eastern U.S., where storm-related stresses are weak. In the Kattegat Sea (Sweden), sandy sediments above the halocline were more affected by wind-induced impacts than by fishing, but mud sediments below the halocline experienced an increase in frequency of 90% in the spring and summer and of 75-85% in the autumn and winter due to fishing (Floderus and Pihl 1990). Thus, even when recovery times are fast, persistent disturbance by fishing could lead to cumulative impacts. In contrast, Dyekjaer et al. (1995) found that in Denmark, although local effects of short duration might occur, annual release of suspended particles by mobile fishing gear is relatively unimportant compared with that resulting from wind and land runoff.

Chronic suspension of sediments and resulting turbidity can also affect aquatic organisms through behavioral, sublethal and lethal effects, depending on exposure. Species reaction to turbidity depends on life history characteristics of the species. Mobile organisms can move out of the affected area and quickly return once the disturbance dissipates (Simenstad 1990, Coen 1995). Even if species experience high mortality within the affected area, species with short life history stages and high levels of recruitment or high mobility can repopulate the affected area quickly. However, if effects are protracted and occur over a large area, recovery through recruitment or immigration will be hampered. Furthermore, chronic re-suspension of sediments may lead to shifts in species composition by favoring those species that are better suited to recover or those that can take advantage of the pulsed nutrient supply as nutrients are released from the seafloor to the euphotic zone (Churchill 1989).

Changes in Chemistry

Fishing can produce changes to the chemical makeup of both the sediments and overlying water mass through mixing of subsurface sediments and porewater. In shallow water this mixing might be insignificant in relation to that produced by tidal and storm surge and wave action, but in deeper, more stable waters, this mixing can have significant effects (Rumohr 1998). In a shallow, eutrophic sound in the North Sea, fishing caused an increase in average ammonia content (although horizontal variations prevented interpretations of these increases) and a decrease in oxygen due to the mixing of reduced particles from within the sediments (Riemann and Hoffman 1991). Also in the North Sea, fishing enhances the phosphate released from sediment by 70-380 metric tons per year for otter trawls and by 10,000-70,000 metric tons per year for beam trawlers (ICES 1992). These pulses are partially compensated by lower fluxes after the trawl passes. It is important to remember that these releases recycle existing nutrients, rather than adding new nutrients, such as nutrients derived from rivers and land runoff (ICES 1992). During seasons when nutrients are low, mixing of the sediments could cause increased primary production and/or eutrophication.

Changes to Benthic Communities

Benthic communities are affected by fishing gear through damage to the benthos in the path of the gear and disturbance of the seafloor to a depth of up to 30 cm. Many kinds of epibenthic animals are crushed or buried, while infauna is excavated and exposed on the seabed. This is in addition to smothering addressed above.

Specific impacts from fishing depend on the life history, ecology and physical characteristics of the biota present (Bergman and Van Santbrink 2000). Mobile species that exhibit high fecundities and rapid generation times will recover more quickly than non-mobile, slow-growing organisms. In Mission Bay, California, polychaetes with reduced larval phases and postlarval movements had small-scale dispersal abilities that permitted rapid re-colonization of disturbed patches that maintained high infaunal densities (Levin 1984). Those with long-lived larvae were only available for successful re-colonization if the timing of disturbance coincided with periods of peak larval abundance; however, these species were able to colonize over much larger distances. Rijnsdorp and Van Leeuwen (1996) found that increased

growth in the smallest size classes of plaice in the North Sea correlated to eutrophication and seabed disturbance caused by beam trawls. The authors hypothesized that trawling caused a shift in the benthic community from low-productive, long-lived species to high-productive, short-lived species that benefited from increased nutrient availability. This potentially could have led to increased prey availability, and thus, higher growth rates for the juvenile plaice.

The physical structure of biota also affects their ability to sustain and recover from physical impacts with fishing gear. Thin-shelled bivalves and starfish show higher damage than solid-shelled bivalves in fished areas (Rumohr and Krost 1991). Animals that are able to retract below the surface of the seafloor or live below the penetration depth of the fishing gear will sustain much less damage than epibenthic organisms that inhabit the sediment surface. Animals that are more elastic and can bend upon contact with fishing gear will suffer much less damage than those that are hard and inflexible (Eno et al. 2001). Kaiser et al. (2000) found that chronic fishing around the Isle of Man, in the Irish Sea, has removed large-bodied fauna such that benthic communities are now dominated by smaller-bodied organisms that are less susceptible to physical disturbance. Off the northwest shelf of Australia, a switch of dominant fish species from lethrins and lutjanids (which are almost exclusively associated with habitats supporting large epibenthos) to saurids and nemipterids (which were found on open sand) occurred after removal of epibenthic fauna by trawling (Sainsbury et al. 1993, 1994) has been documented.

Increased fishing pressure can also lead to changes in distribution of species, either through movement of animals away from or towards the fished area (Kaiser and Spencer 1993, 1996, Ramsay et al. 1996, Kaiser and Ramsay 1997, Ramsay et al. 1998, Bradshaw et al. 2000, Demestre et al. 2000). Frid and Hall (1999) found higher prevalence of fish remains and scavengers and a lower abundance of sedentary polychaetes in stomach contents of dabs in the North Sea in areas of higher fishing effort. Kaiser and Spencer (1994) document that gurnards and whiting aggregate over beam trawl tracks and have higher numbers of prey items in their stomachs shortly after trawling. Based on these studies, researchers have speculated that mobile fishing may lead to increased populations of species that exhibit opportunistic feeding behavior. Fonds and Groenewold (2000) modeled results for the southern North Sea indicating that the annual amount of food supplied by beam trawling is approximately 7% of the food demand of common benthic predators. This level could help maintain populations but is insufficient to support further population growth.

The most recent and comprehensive summary of gear effects on benthic marine habitats was prepared by the National Research Council. This report, entitled "Effects of Trawling and Dredging on Seafloor Habitat" (NRC 2002) reiterated four general conclusions regarding the types of habitat modifications caused by trawls and dredges.

1. Trawling and dredging reduce habitat complexity.
2. Repeated trawling and dredging result in discernable changes in benthic communities.
3. Bottom trawling reduces the productivity of benthic habitats.
4. Fauna that live in low natural disturbance regimes are generally more vulnerable to fishing gear disturbance.

The NRC report also summarized the indirect effects of mobile gear fishing on marine ecosystems. It did not consider the effects of all gear types, only the two (trawls and dredges) that are considered to most affect benthic habitats. It also provided detailed information from only a few individual studies.

An additional source of information used in this DEIS is the report of a gear effects workshop sponsored by the New England and Mid-Atlantic Fishery Management Councils in October 2001 (NREFHSC 2002). This report includes

conclusions reached by a panel of experts on the effect of different gears on benthic habitat types in the Northeast U.S.

Table 52. Impacts of Scallop Dredges on Benthic Habitat from the Gear Effects Workshop Report (NREFHSC 2002).

TYPE OF IMPACT	DEGREE OF IMPACT	DURATION	TYPE OF EVIDENCE	COMMENTS
MUD				
Removal of Major Physical Features	N/A			
Impacts to Biological Structure	N/A			
Impacts to Physical Structure	N/A			
Changes in Benthic Prey	N/A			
SAND				
Removal of Major Physical Features	Unknown			
Impacts to Biological Structure	XXX (L) X (H)	Months - Yrs	PR, GL, PJ	
Impacts to Physical Structure	XXX (H, L)	Days - Months	PR, GL, PJ	Cut (shucked) shell provides additional structure.
Changes in Benthic Prey	Unknown			Disposal of shucked scallop viscera may alter local food sources - impacts unknown.
GRAVEL				
Removal of Major Physical Features	Unknown			
Impacts to Biological Structure	XXX (H) N/A (L)	Several Years (H)	PR, GL, PJ	(L)=deepwater banks, gravel ridges in GOM; fishery is not prosecuted here
Impacts to Physical Structure	XXX (H) N/A (L)	Months - Years (H)	PR, GL, PJ	(L)=deepwater banks, gravel ridges in GOM; fishery is not prosecuted here. Cut shell provides additional structure.
Changes in Benthic Prey	XXX (H) N/A (L)	Months - Years (H)	PR, GL, PJ	(L)=deepwater banks, gravel ridges in GOM; fishery is not prosecuted here
KEY: X = Effect can be present, but is rarely large; XX = Effect is present and moderate; XXX = Effect is often present and can be large; N/A = Effect is not present or not applicable; Unknown = effects are not currently known; (H) = High energy environment; (L) = Low energy environment; PR = Peer reviewed literature; GL = Grey literature; PJ = Professional judgement. For definitions of Substrate Type and Type of Impact see Appendix D. NOTE: Ongoing Canadian experiments will be able to provide additional information in the near future.				

The results of the workshop have been considered in the next section, which includes a review of the relevant fishing gear effects literature.

New Bedford Scallop Dredges - Sand

Three studies of the effects of New Bedford scallop dredges on sand substrate are summarized, all performed since 1990 (Table 53). One was conducted in an estuary on the Maine coast (3) and two on offshore banks in the Gulf of Maine (1,2). Two of them were observational in nature, but did not include any direct observations of dredge effects. The other one was a controlled experiment conducted in an unexploited area in which a single dredge was towed repeatedly over the same area of bottom during a single day. One study examined physical effects and two examined physical and biological effects. One of them included an analysis of geochemical effects to disturbed silty-sand sediments.

Physical effects

Dredging disturbed physical and biogenic benthic features (sand ripples and waves, shell deposits [1], and amphipod tube mats [2]), caused the loss of fine surficial sediment (3), and reduced the food quality of the remaining sediment (3). Sediment composition was still altered six months after dredging, but the food quality of the sediment had recovered by then.

Biological effects

There were significant reductions in the total number of infaunal individuals in the estuarine location immediately after dredging and reduced abundances of some species (particularly one family of polychaetes and photid amphipods), but no change in the number of taxa (3). Total abundance was still reduced four months later, but not after six months. The densities of two megafaunal species (a tube-dwelling polychaete and a burrowing anemone) on an offshore bank were significantly reduced after commercial scallop vessels had worked the area (2).

Table 53. Effects of New Bedford Scallop Dredges on Sand Habitat: Summary of Published Studies

S = statistically significant; U = undisturbed; D = disturbed; HT = heavily trawled; LT = lightly trawled

No.	Reference	Location	Depth	Sediment	Effects	Recovery	Approach
1	Auster et al. 1996	Stellwagen Bank, Gulf of Maine (USA)	20-55 m	Coarse sand	Disturbance of storm sand ripples and low sand waves, dispersal of shell deposits in wave troughs.		Examined gear tracks in side-scan sonar images.
2	Langton & Robinson 1990	Fippennies Ledge, Gulf of Maine (USA)	80-100 m	Gravelly sand with some gravel, shell hash, and small rocks	Coarser substrate, disruption of amphipod tube mats, piles of small rocks and scallop shells dropped from surface, S reductions in densities of tube dwelling polychaete and burrowing anemone.		Submersible observations made two years apart, before and after commercial dredging of area.

No.	Reference	Location	Depth	Sediment	Effects	Recovery	Approach
3	Watling et al. 2001	Damariscotta River, Maine (USA)	15 m	Silty sand	Loss of fine surficial sediments, lowered food quality of sediment, reduced abundance of some taxa, no changes in number of taxa, S reductions in total number of individuals 4 months after dredging.	No recovery of fine sediments, full recovery of benthic fauna and food value within 6 mos.	Experimental study (23 tows in one day), effects on macrofauna (mostly infauna) evaluated 1 day and 4 and 6 mos after dredging.

5.3.3 New Bedford Scallop Dredges - Mixed Substrates

Three studies have been conducted on mixed glacially-derived substrates, two of them over 20 years ago and one 10 years ago (Table 54). All were done in the northwest Atlantic (one in the U.S. and two in Canada) at depths of 8 to 50 m. Two observational studies examined physical effects and one experimental study examined effects on sediment composition to a sediment depth of 9 cm. The experimental study evaluated the immediate effects of a single dredge tow. None of these studies evaluated habitat recovery or biological effects, although one (3) examined geochemical effects.

Physical effects

Direct observations in dredge tracks in the Gulf of St. Lawrence documented a number of physical effects to the seafloor, including bottom features produced by dredge skids, rings in the chain bag, and the tow bar (1,2). Gravel fragments were moved and overturned and shells and rocks were dislodged or plowed along the bottom (2). Sampling one day after a single dredge tow revealed that surficial sediments were re-suspended and lost and that the dredge tilled the bottom, burying surface sediments and organic matter to a depth of 9 cm, increasing the grain size of sediments above 5 cm, and disrupting a surface diatom mat (3). Microbial biomass at the sediment surface increased as a result of dredging.

Table 54. Effects of New Bedford Scallop Dredges on Mixed Substrate Habitat: Summary of Published Studies

S = statistically significant; U = undisturbed; D = disturbed; HT = heavily trawled; LT = lightly trawled

No.	Reference	Location	Depth	Sediment	Effects	Recovery	Approach
1	Caddy 1968	Northumberland Strait, Gulf of St. Lawrence, Canada	20 m	Mud and sand	Drag tracks (3 cm deep) produced by skids, smooth ridges between them produced by rings in drag belly, dislodged shells in dredge tracks.		Diver observations of physical effects of two tows.
2	Caddy 1973	Chaleur Bay, Gulf of St. Lawrence, Canada	40-50 m	Gravel over sand, with occasional boulders	Suspended sediment, flat track, marks left by skids, rings and tow bar, gravel fragments less frequent (many overturned), rocks dislodged or plowed along bottom.		Submersible observations of tow tracks made less than 1 hr after single dredge tows.
3	Mayer et al. 1991	Coastal Gulf of Maine (USA)	8 m	Mud, sand and shell hash	Lowered sediment surface by 2 cm, injection of organic matter and finer sediment into lower 5-9 cm, increased mean grain size in upper 5 cm, disruption of surface diatom mat, increased microbial biomass at sediment surface.		Experimental study, compared dragged and undragged sites before and 1 day after a single dredge tow.

5.3.4 Summary

The following conclusions were reached in Amendment 10 to the Atlantic sea scallop FMP:

- Potentially adverse habitat impacts from bottom trawling occur throughout most of the NE region on a variety of substrates;
- High levels of fishing activity with scallop dredges occur primarily in the Mid-Atlantic region and secondarily on Georges Bank, according to the vessel trip report data from 1995 – 2001. Intense dredge activity from the same data show that the highest intensity of scallop fishing is in the Great South Channel and portions of the Mid-Atlantic region from Long Island to VA. The VMS data from 1998 confirms this assessment and also shows high scallop fishing intensity in the southern part of Closed Area II because the period included the area access program during the 1999 and 2000 fishing years which was intended to have high levels of effort to reduce impacts in open areas where smaller scallops existed.
- Potentially adverse habitat impacts from scallop dredging may occur in areas where scallop effort overlaps with areas where EFH has been designated for species with vulnerable EFH. According to the analysis within this document, scallop fishing effort is distributed in the same proportion as juvenile and adult EFH designations, but areas with more intense scallop fishing effort tend to be over areas with less EFH designations for species with vulnerable EFH.

5.4 *Endangered and Other Protected Species*

The following section is based largely on or is excerpted from the 2/24/2003 Biological Opinion (BO) on the continued implementation of the Sea Scallop FMP prepared by NOAA Fisheries as part of its responsibilities under Section 7 of the Endangered Species Act (ESA). While the subject of the consultation has changed since preparation of the BO --- Framework Adjustment 15 to the FMP has been implemented and Amendment 10 has been approved by the Council and submitted to NMFS --- the background information is still relevant. The major points provided here are intended to lend context to the discussion of the impacts of management measures proposed in Framework Adjustment 16/39 on threatened, endangered and other protected species.

Dredges and otter trawls are the primary gear types used in the Atlantic sea scallop fishery. The majority of full-time participants in the limited access fishery use dredge gear (approximately 255 of the 314 full-time permit holders), particularly in New England and the Georges Bank area. A large percentage of the part-time and occasional vessels fish in the Mid-Atlantic, use trawl gear and in recent years have concentrated fishing effort in the Delmarva area. Although they may use any gear type to harvest sea scallops, general category vessels primarily use dredge and bottom trawl gear to land up to 400 lbs. of scallops per trip, and generally use both dredge and trawl gear. In 2002 general category permits numbered 2,653.

Fishing patterns have shifted in the last several years as the result of several management programs allowing controlled access to areas of Georges Bank previously closed scallop vessels and to specific areas in the mid-Atlantic to take advantage of aggregations of larger scallops. With increased monitoring and observer coverage, it has become clear that protected species issues exist where there is an overlap with the distribution those species scallop fishing operations.

To focus the discussion in this document, it is necessary to acknowledge that NOAA Fisheries has determined that the scallop fishery is not likely to adversely affect shortnose sturgeon (*Acipenser*

brevirostrum), the Gulf of Maine distinct population segment (DPS) of Atlantic salmon (*Salmo salar*), hawksbill sea turtles (*Eretmochelys imbricata*), North Atlantic right whales (*Eubalaena glacialis*), humpback whales (*Megaptera novaengliae*), fin whales (*Balaenoptera physalus*), sei whales (*Balaenoptera borealis*), blue whales (*Balaenoptera musculus*), or sperm whales (*Physeter macrocephalus*) all of which are listed as endangered species under the ESA. The rationale for this determination is described in the February 24, 2003 BO and is incorporated herein by reference.

Similarly, other cetaceans not listed under the ESA, but protected by the Marine Mammal Protection Act, as well the pinniped species inhabiting the action area, do not appear to be vulnerable to scallop gear or negative fishery impacts because of scallop gear configuration and/or the lack of overlap between the fishery and the distribution of these species. This information was fully discussed in Amendment 10 to the Scallop FMP currently under review by NOAA Fisheries. At this writing, no new information has become available to change these conclusions.

Based on information known about the species and documented interactions with sea scallop gear, NOAA Fisheries has determined that the sea scallop fishery currently adversely effects loggerhead, Kemp's ridley, green and leatherback sea turtles --- all listed as threatened or endangered under the ESA. The following two sections "Summary of effects of gear interactions" and "Observed interactions between sea turtles and scallop gear" are excerpted from the 2/24/03 BO to establish a baseline for discussion of the management alternatives.

5.4.1 Summary of effects of gear interactions

The distribution of loggerhead, Kemp's ridley, and green sea turtles overlaps with the distribution of scallop gear from the southern boundary of the management area (North Carolina/South Carolina border) to Cape Cod. Leatherbacks have a broader distribution and are expected to overlap with operation of the scallop fishery throughout the area where the sea scallop fishery operates --- from the North Carolina/South Carolina border through the Gulf of Maine.

The distribution and concentration of all four sea turtle species within the management area is expected to be highest in summer months. Turtles are also expected to be present in spring and fall months as they move to and from foraging grounds. In general, none of the four species are expected to be present in the management area north of Cape Hatteras, North Carolina, during the winter. All four species are expected to be more prevalent in Mid-Atlantic as compared to New England waters. In addition, Kemp's ridley and green sea turtles are expected to occur predominantly in inshore waters although this conclusion may be biased by the difficulty of detecting these relatively small species during surveys of offshore continental shelf waters.

Based on the CeTAP study (1982) and Shoop and Kenney (1992), the distribution of loggerheads and leatherbacks are expected to overlap with scallop fishing gear throughout Mid-Atlantic continental shelf waters in the summer with lower concentrations in the spring and fall. Based on surveys (CeTAP 1982; Shoop and Kenny 1992), loggerhead sea turtles are considered to be the most abundant of these four turtle species in the action area. This is not unexpected given that the population of Atlantic loggerheads is more numerous than either Kemp's ridley, green or leatherback sea turtles.

Hard-shelled sea turtles have been injured and killed as a result of being captured in scallop dredge gear. There are currently no measures that have been proven to eliminate the risk of interaction between turtles and scallop dredge gear. Although tow times for scallop dredge gear would typically prevent sea turtles from drowning in scallop gear once they were captured, there are no enforceable restrictions limiting tow times. Tow times in excess of 60 minutes are not unusual and at least one turtle

was retrieved in a comatose condition after a tow of less than 60 minutes. Therefore, sea turtles caught in a scallop dredge can be killed or injured as a result of forced submergence during scallop tows.

In addition, hard-shelled sea turtles are also injured or killed as a result of injuries suffered during interactions when they struck by a dredge, crushed by debris, or as a result of being dropped onto a fishing vessel when a dredge is hauled and the catch is sorted. Given their large size and differences in prey and habitat preferences, leatherback sea turtles are not expected to be caught in dredge gear or struck by the gear when it is operating on the bottom.

There have been no known interactions between scallop trawl gear and sea turtles but interactions are reasonably likely to occur given the prevalence of this gear type in the Mid- Atlantic, the presence of sea turtles in Mid-Atlantic waters, and the known interactions between sea turtles in similar trawl gear used in other Mid-Atlantic fisheries. Loggerheads, Kemp's ridley, green, and leatherback sea turtles may suffer injuries or be killed as a result of capture (forced submergence) in scallop trawl gear. As described above, although tow times for scallop gear would typically prevent turtles from drowning, there are no enforceable restrictions limiting tow times and tow times in excess of 60 minutes are not unusual.

Given that there is a reasonable likelihood that the distribution of loggerhead, Kemp's ridley, green, and leatherback sea turtles will overlap with the distribution of gear used in the scallop fishery, it is NOAA Fisheries' opinion that loggerhead, Kemp's ridley, green, and leatherback sea turtles may be taken in the scallop fishery as a result of capture in or being struck by gear used in the fishery. Such interactions may occur throughout the area where distribution of these species and operation of the scallop fishery overlap. Although a complete analyses is required, more current information on takes of sea turtles in 2003 may clarify levels of takes by dredge gear both inside and outside of the Scallop Access Areas and elsewhere where the fishery overlaps with sea turtle distribution.

5.4.2 Observed interactions between sea turtles and scallop gear

Although three sea turtles had previously been observed to have been captured by scallop dredge gear in 1996, 1997 and 1999, this gear was not believed to pose a threat to sea turtles until the 2001 scallop fishing. Sea turtles generally avoid the low temperatures preferred by sea scallops (<50° F), a feature that was believed to protect sea turtles from interacting with mobile bottom gear used in the scallop fishery. As the result, the three turtles that had been captured between 1996 and 1999 were treated as anomalies.

From June through October 2001, however, 11 turtles were captured by scallop dredge vessels fishing in the reopened Scallop Access Areas. A scallop dredge vessel that had been fishing in the Hudson Canyon Area reported that they had captured two additional turtles (one live and one dead), although further information on these two interactions is not available. The condition of the 14 turtles that had been captured by scallop dredge vessels from 1996-2001 varied from dead animals to live animals with injuries, and live turtles with no apparent injuries.

Sea turtles were later captured in scallop dredge gear within the Hudson Canyon Closed Area in the 2002 fishing year despite substantially-reduced vessel participation, suggesting that the turtles captured in 2001 were not an anomaly. Based on preliminary reviews of the 2002 observer reports, 23 turtles were captured in scallop dredge gear for vessels operating in the Hudson Canyon Closed Area from July - October 2002. Two of these were decomposed carcasses. Since the cause of death could not be determined and the decomposed condition of the turtles suggested that the deaths occurred well before the turtles were captured in the dredge, NOAA Fisheries did not attribute these two deaths to the scallop dredge fishery. One additional turtle was reported captured in scallop dredge gear by the crew of a vessel

fishing in the Hudson Canyon Area. As had been seen in 2001, the condition of the 23 turtles observed included uninjured turtles, alive/injured, and dead.

In all, of the 40 hard-shelled turtles observed or reported as captured in the scallop dredge fishery from 1996-October 31, 2002, 23 were reported to be alive with no apparent injuries, 6 were alive with injuries (includes one that died of the injuries after being hauled onto vessel), 6 were of unknown condition (includes the 3 turtles that were reported rather than observed), and 5 were dead (includes 2 that were decomposing carcasses and that NOAA Fisheries is not attributing to the scallop fishery).

There have been no documented interactions between sea turtles and scallop trawl gear. However, observer coverage for these vessels has been low and turtles captured in this gear may have gone unreported for various reasons. Based on fisheries statistics data for scallop fishing years 1999-2001 (March 1, 1999-February 28, 2002), the majority of the annual scallop trawl landings (89%, 77%, and 74%, respectively) were obtained from waters off of the Delmarva Peninsula. Scallop landings by trawl gear from the Delmarva area occur throughout the year but are highest from April-November, times when sea turtles are present in these Mid-Atlantic waters.

The number of documented interactions between sea turtles and otter trawls used in other fisheries has been extensive. These include the U.S. shrimp trawl fishery and the Mid-Atlantic summer flounder winter trawl fishery (TEWG 1998, 2000), the Delaware horseshoe crab fishery (Spotila et al. 1998), the whelk trawl fishery in South Carolina and Georgia (NOAA Fisheries SEFSC 2001), the long-finned squid bottom trawl fishery in waters off of Delaware (unpublished NOAA Fisheries Sea Sampling Observer Program data), and the North Carolina flynet trawl fishery for Atlantic croaker.

Since the completion of the BO in February, 2003, NOAA Fisheries has received new information identifying that 12 sea turtles were taken in the scallop fishery outside of the Mi-Atlantic Scallop Access Areas through October, 2003. Further information is not available at this writing, although this information is under review as part of the Section 7 consultation that has also been reinitiated for Amendment 10 to the Scallop FMP.

5.5 Human Environment

Because the proposed action includes scallop fishing access in the Georges Bank groundfish closed areas and would change the open area DAS allocations for fishing in open areas elsewhere, the human environment includes the scallop fishing industry throughout the range of management, including approximately 350 scallop vessels or people with limited access scallop permits (292 actively using scallop DAS), over 2,200 vessels and fishermen with general category scallop permits (about 200 that target sea scallops and might fish in the proposed access areas), dealers, processors, markets, suppliers, and fishing communities. Primary centers of fishing industry activities include coastal NC, the Hampton Roads area of VA, Cape May, Barnegat, and Point Pleasant, NJ, New Bedford, Provincetown/Chatham, and Gloucester, MA. The human environment was described in detail in Section 7.1 of the FSEIS for Amendment 10 (NEFMC 2003), which the Council recently submitted and is currently undergoing Secretarial review.

In addition, the proposed access program and reductions in finfish bycatch elsewhere could have impacts on vessels and fishermen with limited access and open access groundfish permits, dealers, processors, markets dealers, processors, markets, suppliers, and fishing communities, primarily ranging from NJ to ME. A detailed description of the human environment is presented in Section 9.4 of the FSEIS for Amendment 13 to the Multispecies FMP, which the Council recently submitted and is currently undergoing Secretarial review.

6.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF IMPACTS

6.1 Aggregated Impacts Of Preferred Alternatives

6.1.1 Summary of Aggregated Biological Impacts

6.1.1.1 Scallop Resource

Unlike the projections for Amendment 10 using 2002 survey data, the new projections using 2003 data are considerably more optimistic and there are fewer differences between the effects of the fishery on the scallop resource, with and without access to the Georges Bank closed areas. In all cases, the projected biomass is well above the stock biomass target of 5.6 kg/tow.

Primarily, the biological impacts of the fishery on the scallop resource and the environment come from differences in the open fishing areas, because with access the Scallop FMP under Amendment 10 would allocate fewer DAS to fish in open fishing areas. This adjustment was contemplated in Amendment 10 because with the fishing effort in the Georges Bank closed areas, less effort in other open areas is needed to achieve the annual $F=0.2$ fishing mortality target for the entire scallop stock(s). Simply allocating Georges Bank closed area trips without adjusting the open area DAS allocations would cause the plan to exceed the annual mortality targets, possibly causing overfishing to occur.

Although impacts on total scallop biomass are very similar, with and without access, and the biomass is predicted to stay well above the biomass target through 2013, under all scenarios, there are considerably different effects on scallops in the open fishing areas. Section 6.2.11 below focuses on the biological impacts on the overall scallop resource, with ('A10 rotation' and 'FW16 rotation') and without access ('No Action' and '24,000 DAS', the latter representing a proxy for status quo) to the Georges Bank closed areas, an action proposed by this framework adjustment. It also compares the various impacts for the two access alternatives with one another.

Overall, the biological impacts on the scallop resource are not substantial. By 2008, total biomass is projected to be only 9% higher with access to the Georges Bank areas, compared to No Action (see Figure 23). Except for the proportion of landings made of large U10 scallops, the landings are also about the same (see Figure 24). Hence, the economic benefits of the options are also statistically indistinguishable over the ten-year simulation time frame. Thus, other considerations need to be used to distinguish between No Action and the proposed action that would allow scallop fishing in the Georges Bank closed areas. Some of these other considerations are described in the aggregate impact descriptions for groundfish, habitat, and protected species below. These effects mainly occur through a reduction of fishing time in the open areas of the Georges Bank and Mid-Atlantic, as well as an overall reduction of bottom contact time resulting from fishing being concentrated on the largest, most dense scallops if fishing is allowed in the Georges Bank access areas.

Within the three Georges Bank closed areas, the scallop resource will of course experience some changes due to the fishing effort in the access areas. Because growth has slowed down for the old, large scallops in the access areas, the planned fishing effort for the proposed action will cause biomass in these areas to decline toward an equilibrium condition after a long closure duration (portions of Closed Area I and Nantucket Lightship Area have only been fished for one year since 1994, and only two years for portions of Closed Area II). The projections show this effect in Figure 2.

The access area (open symbols) with the largest and most dense scallops, the Nantucket Lightship Area (circle symbol), is projected to see the greatest decline in biomass, from 55 kg/tow in 2003 to 35 kg/tow after the first rotation in 2007 and 23 kg/tow after ten years if the proposed mechanical rotation continues. Scallop biomass in the remaining closed part of the Nantucket Lightship Area is projected to remain constant at a low level⁴⁹.

Scallop biomass in the Closed Area I and Closed Area II access areas is projected to similarly decline, from around 19 - 23 kg/tow in 2003 to 14 - 20 kg/tow by 2007 after the first series of mechanical rotation, and then to 9 - 15 kg/tow after ten years of rotation.

Scallop biomass in the areas that would remain closed to scallop fishing within Closed Area I and Closed Area II (shaded diamonds and squares in Figure 2) are expected to increase from 7 - 12 kg/tow in 2003 to 18 - 21 kg/tow after 10 years of closure, assuming average recruitment. Because these areas would continue to be closed to scallop fishing, any above average recruitment in the closed areas would contribute to a more rapid increase in scallop biomass.

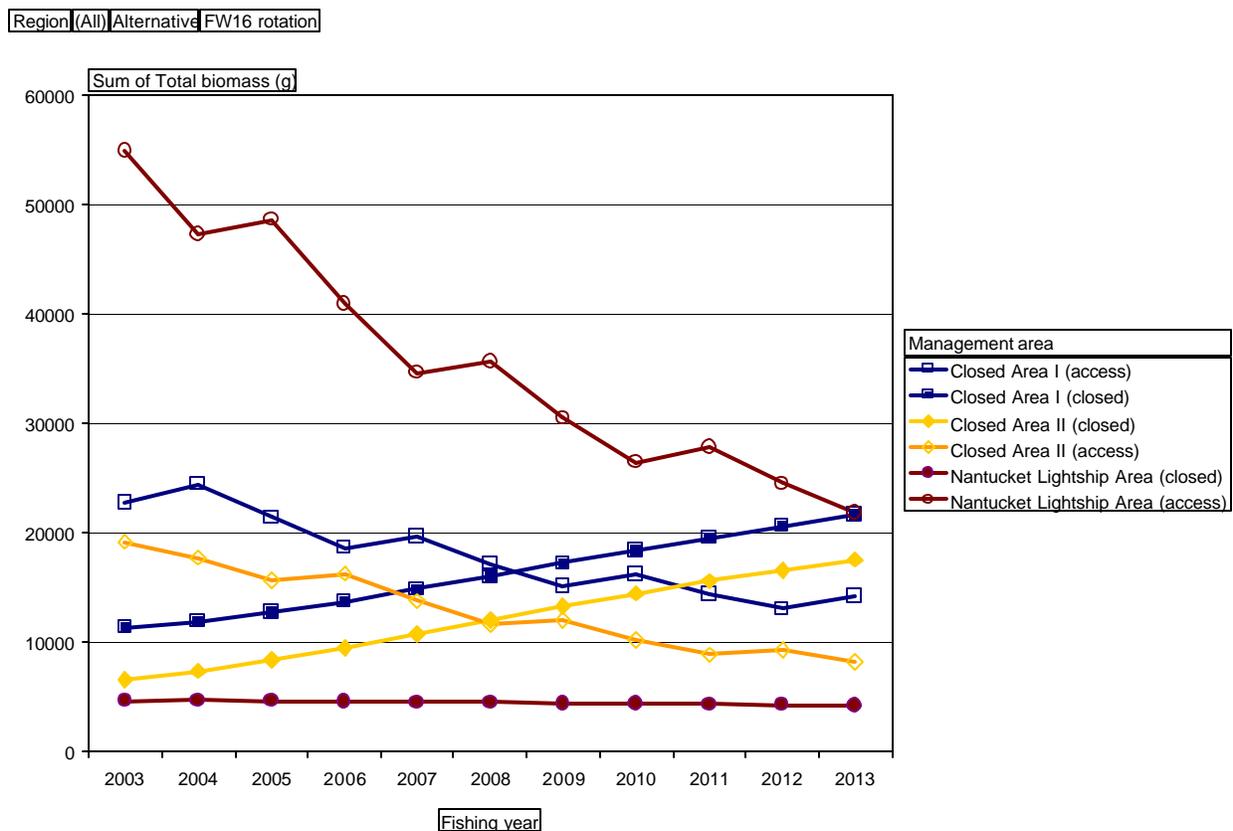


Figure 2. Projected changes in total biomass in the Georges Bank groundfish closed areas, comparing the biomass in access areas (open symbols) to the biomass in the areas that would remain closed under the framework adjustment (shaded symbols).

⁴⁹ The plotted mean results for the projections in all areas, assume recruitment at average levels, observed in the 1982-2002 survey time series. Recruitment is however variable, especially for specific areas, and the actual results may vary considerably from these averaged results.

The most notable differences of impacts on the scallop resource from the proposed action are in the open fishing areas of the Georges Bank and Mid-Atlantic regions. Because less fishing effort is required in the open areas to achieve the management plan's fishing mortality targets, there would be less scallop mortality there.

As a result, the projections indicate a substantial increase in scallop biomass in the Georges Bank region. Although fishing mortality in the open parts of Georges Bank would be greater with no action, biomass is expected to increase from 2 kg/tow in 2003 to almost 5 kg/tow by 2010 before leveling off (Figure 3). This result is expected because the scallop resource on Georges Bank is recovering from chronically high fishing mortality before 1999 and below average recruitment in the past five years. Projections that reflect the reductions in fishing mortality associated with recent management actions⁵⁰, coupled with an assumption of average recruitment, indicate an increase in biomass.

Lower fishing effort in the open areas is expected with access (e.g. 'FW16 rotation') and therefore the recovery of scallop biomass is quicker, using the same assumptions that apply to the no action projection. In this case, the total biomass is projected to recover to over 5 kg/tow by 2007 (3 to 4 years earlier than the no action projection), and continue to increase up to almost 9 kg/tow by 10 years from now. Thus, after one round of mechanical rotation of access areas, in 2007, the open area scallop biomass is projected to be 43% higher than with no action! Over the 10-year period, open area scallop biomass is projected to be nearly double the amount anticipated under no action.

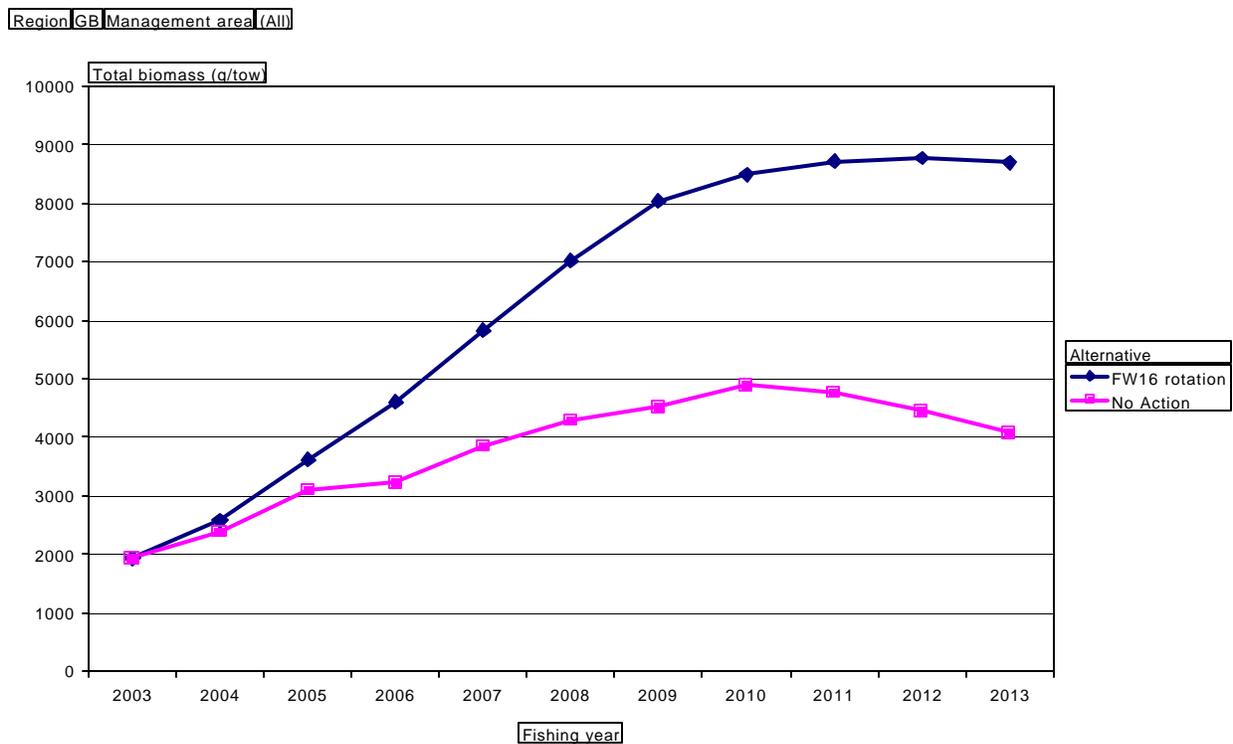


Figure 3. Difference in projected total biomass (weight per tow) in the open parts of the Georges Bank region.

⁵⁰ Recent actions include the effects of Amendment 7 regulations with the recent framework adjustments, the Amendment 10 DAS allocations that were assumed in the projections, plus the effect of 4-inch rings if they are also approved as part of Amendment 10.

What is important about higher scallop biomass in the open fishing areas, if the overall scallop biomass is near or above the target? Experience has shown that higher scallop biomass causes the catch rates to rise, increasing the total revenue per DAS. It also reduces bottom contact time, inducing the vessel to fish less per DAS and seek larger scallops that can be shucked more efficiently (i.e. more pounds per man-hour). This also has long-term benefits for minimizing impacts on bycatch (which is directly proportional to bottom contact time) and on habitat.

The landings per DAS (LPUE), a variable that contributes to economic efficiency and vessel profit, is expected to rise with No Action and with access (Figure 4). LPUE in the open areas of the Georges Bank region are projected to rise from the present 1,250 lbs./day to around 2,000 lbs./day with No Action, showing the same response as the projections of total scallop biomass. With access, however, LPUE is expected to rise more quickly and top off at over 2,500 lbs./day, or about 25% higher than with no action.

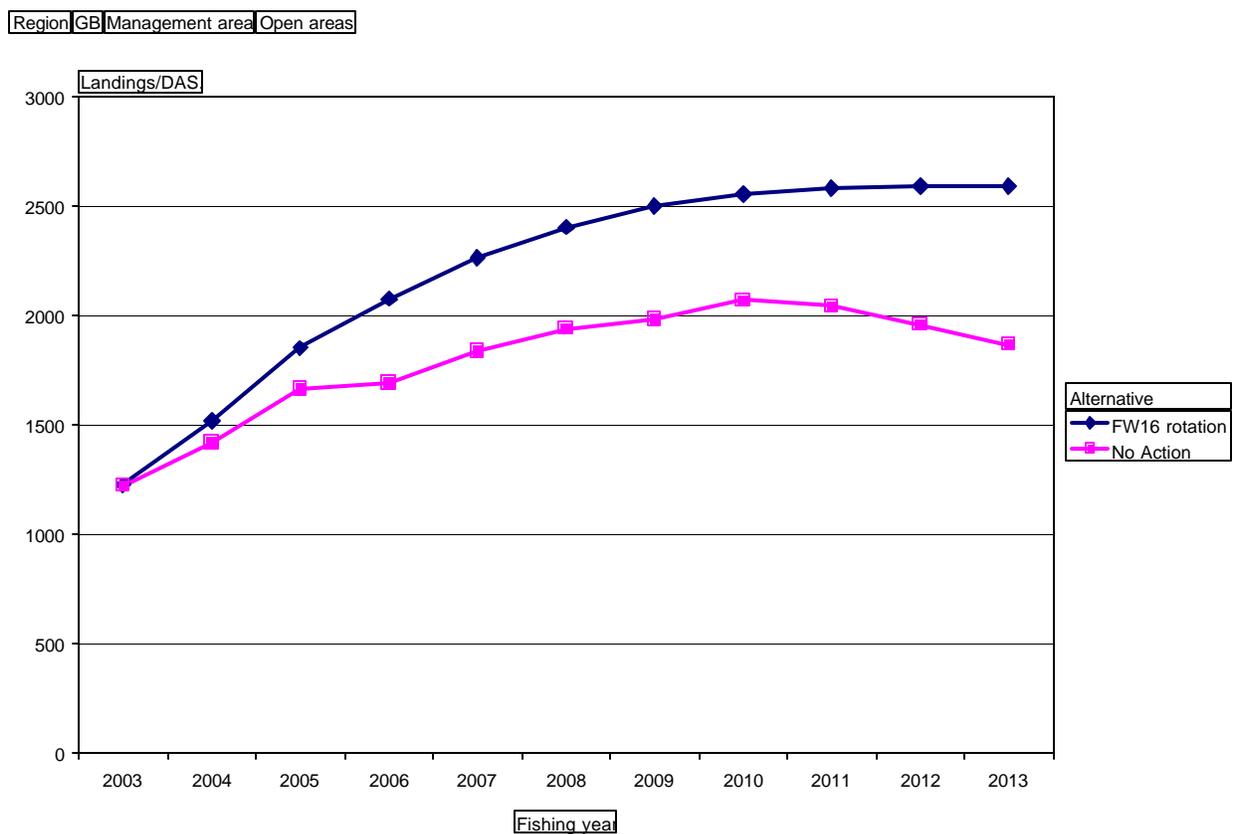


Figure 4. Difference in projected landings per DAS in the open portions of the Georges Bank region

The situation in the Mid-Atlantic is a bit different than for the open areas in the Georges Bank region, because the scallop resource in the Mid-Atlantic has experienced extraordinarily high levels of recruitment over the past five years and biomass has grown rapidly as a result, despite the chronically high fishing mortality in this area. Some attribute this recruitment phenomenon to a supply from the scallops in the Georges Bank closed areas, but there is no definitive evidence of this.

With No Action, the landings are projected to be unsustainable and biomass, after peaking in 2004, is projected to stop growing despite the closure of the Elephant Trunk Area, and then decline fairly rapidly from around 10 kg/tow in 2006 to about 3.5 kg/tow over the 10 years. While it can be argued that

actions would be taken after 2006 to stymie the declining biomass and prevent it from falling to unacceptable levels, No Action completely mitigates the effect of increasing biomass in the Elephant Trunk Area.

On the other hand, the lower fishing effort in the Mid-Atlantic that is expected with access is projected to allow the scallop biomass to increase to 12 kg/tow in the Mid-Atlantic by 2006 (Figure 5). This is 22% higher than with No Action! Over the ten years, access to the Georges Bank closed areas would allow the plan to reduce mortality in the open fishing areas and biomass in the Mid-Atlantic region would be nearly double the amount projected for No Action.

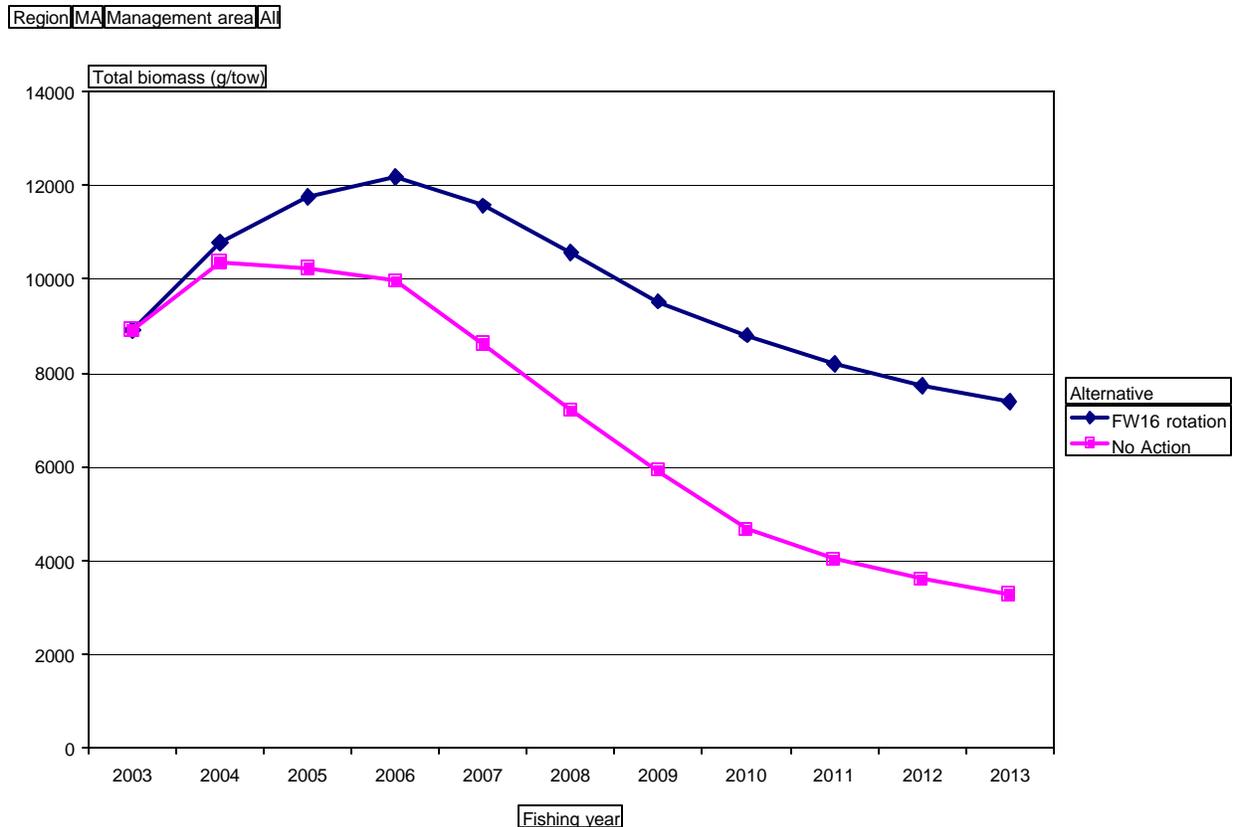


Figure 5. Difference in projected total biomass (weight per tow) in the Mid-Atlantic region.

Similar to the effects described above for the open areas in the Georges Bank region, catch per DAS (LPUE) is higher with access (e.g. 'FW16 rotation') than without ('No Action'). With No Action, LPUE is projected to vary from 1,600 – 2,200 lbs./day through 2006, before increasing to about 2,400 lbs./day in 2007 when the Elephant Trunk Area is expected to re-open, then decline to 1,500 lbs./day by 2013, after the Elephant Trunk Area controlled access management is over.

With access, the LPUE is expected to increase to over 2,300 lbs./day from 2004 – 2006, and then increase again to over 2,500 lbs./day after 2007 – which appears to be sustainable even with the future recruitment assumed by the projection model⁵¹! The higher LPUE has implications for reducing area

⁵¹ The projection model assumes a historic level of recruitment for the survey time series, whose mean is equal to the time-series average recruitment. In the Mid-Atlantic region, this time series average is considerably less than the recruitment that has occurred since the 2000 survey.

swept, and as discussed below, reductions in impacts on bycatch (particularly summer flounder and monkfish) and protected species (sea turtles).

Region MA Management area All

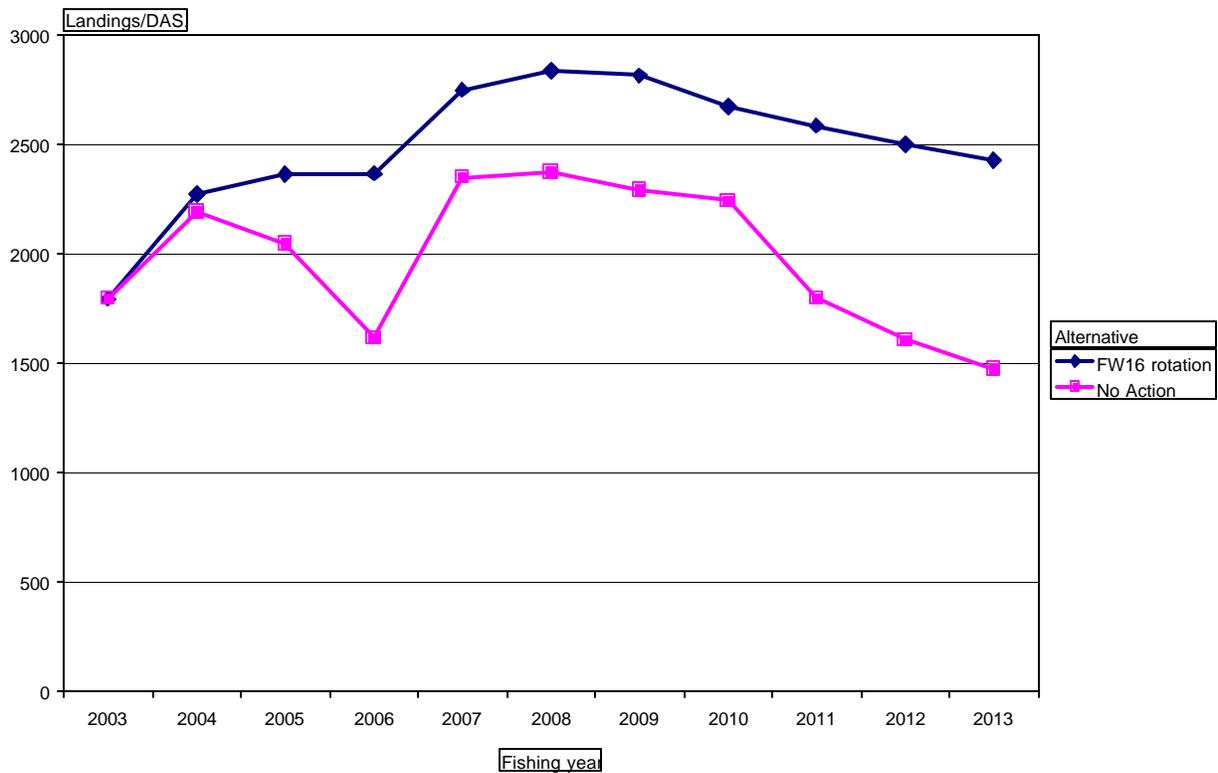


Figure 6. Difference in projected landings per DAS in the Mid-Atlantic region.

The main difference in future landings with and without access is that a greater fraction of the catch comes from more valuable U10 scallops, both in the short term and the long-term. Also, the higher landings with access are more sustainable over the long term than if there were no access. This is an intuitive result, because a greater amount of the scallop resource would be available for fishing with access than without access. Although scallops in the proposed access areas are not abnormally productive compared with scallops in other areas, the access areas contain a significant proportion of the scallop resource and would contribute to sustainable yield if fishing were allowed.

The Magnuson Act requires the plan to achieve a sustainable level of fishing effort, and that bycatch and habitat impacts be minimized to the extent practicable. In choosing the proposed action that allows access to important scallop resources within the Georges Bank closed areas, the Council acted to ensure long-term sustainability of the fishery, while reducing impacts on finfish bycatch, protected species, and potentially habitat.

6.1.1.1.1 Allocations

Trip and DAS allocations for the proposed action were analyzed in Section 6.2.11.1.3 and shown in Table 136 and Table 137 in the columns labeled “FW16”. These potential allocations were compared

with area rotation using the Amendment 10 rotation schedule, where vessels would be allowed to fish in Closed Area I and the Nantucket Lightship Area during 2004, and in Closed Area II only during 2005-2007. Due to changes in predicted Closed Area II scallop biomass when using the 2003 survey data, the proposed action provides a better inter-annual balance in the TACs and allocations.

Table 55 shows the allocations estimated to be most closely associated with the biological projection estimates of the allowable total scallop fishing effort (DAS use) in Section 6.2.11.1.1 to achieve the $F=0.2$ fishing mortality targets for each area, as adjusted by the SMAST video survey density estimates.⁵² Before deriving the limited access vessel allocations, five percent of the TAC was set-aside for funding scallop research (2%), funding the enhanced sea sampling program (1%), and for trips made by vessels with general category scallop permits (2%).

Assuming that the fleet of 292 active⁵³ limited access vessels takes the entire trip allocations and landings are at the applicable scallop possession limits, actual trip length for Nantucket Lightship Area trips is expected to average 5.5 to 5.7 DAS when the area would be open to scallop fishing in 2004, 2006, and 2007. Limited access vessels would be authorized to take one trip per year, and the maximum expected landings would be 72%, 81%, and 97% of the annual TACs, respectively. Increasing the Nantucket Lightship Area trips to two per vessel would exceed 133% of the TAC in each year (after accounting for the set-asides) and rounding down trips would more closely approximate the TAC.

Using the same assumptions, the actual trip length in Closed Area II is expected to range from 6.3 to 6.8 actual DAS, generating landings of 131, 72, and 80% of the TACs for 2004, 2005, and 2007, respectively. The maximum number of trips that may be taken by limited access vessels is two trips in 2004, and one trip each year in 2005 and 2007.

In Closed Area I, on the other hand, allocating just one trip per year is expected to exceed the TAC, with full vessel participation. Rounding down would allow no trips to be allocated in 2005 and 2006, so rounding up to one trip per year is the only option. By doing so, maximum landings is expected to be 171 and 196 percent of the TAC for 2005 and 2006, with a respective actual trip duration averaging 6.8 DAS to catch and land 18,000 lbs. of scallop meats on a full-time vessel.

As a result of simple rounding to the nearest trip, the total scallop catches in particular areas or overall may exceed the adjusted TACs, but would even out over the long term. Short-term and temporary catches that exceed the TACs are not expected to have any meaningful long-term consequences to the scallop stock. Overall, the allocations are expected to land 99, 96, 109, and 83 percent of the combined TACs for the four-year access program, respectively.

⁵² The SMAST video survey scallop density estimates were combined with the annual NMFS RV Albatross survey estimates, inversely weighted by precision as described in Section 6.2.11.1.

⁵³ The analysis does not take into account increases in the number of active limited access vessels since the 2002 fishing year, which partly offsets the effect of the assumption that all trips will be taken by active vessels and will have landings at the scallop possession limit. Data for the 2003 fishing year are presently incomplete.

Table 55. Additional controlled access trip and DAS allocations for scallop fishing by limited access vessels in the proposed Georges Bank access areas. These allocations would be added to the Hudson Canyon Area controlled access allocations. The analysis also shows the percent of the TACs expected to be taken if all trips are taken and land the maximum allowed under the applicable possession limit.

	2004	2005	2006	2007
Maximum trips allocated				
Closed Area I	0	1	1	0
Nantucket Lightship Area	1	0	1	1
Closed Area II	2	1	0	1
Maximum days allocated and charged				
Closed Area I	0	12	12	0
Nantucket Lightship Area	12	0	12	12
Closed Area II	24	12	0	12
Controlled access days	36	24	24	24
Maximum controlled access trips taken				
Full-time	3	2	2	2
Part-time	2	1	1	1
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	10,800	14,400	14,400	14,400
Occasional	4,500	3,000	3,000	3,000
Potential percent of TAC landed				
Closed Area I		170.6%	195.9%	
Nantucket Lightship Area	71.7%		81.4%	97.2%
Closed Area II	131.1%	71.9%		80.0%
Combined	99.1%	95.9%	109.1%	83.3%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Closed Area I		6.8	6.8	
Nantucket Lightship Area	5.7		5.5	5.5
Closed Area II	6.8	6.5		6.3
Days charged, but not used	16.8	10.6	11.7	12.1
Total expected DAS use				
Closed Area I	-	1,897	1,888	-
Nantucket Lightship Area	1,591	-	1,531	1,536
Closed Area II	3,809	1,808	-	1,750
Total DAS used	5,400	3,705	3,418	3,286
Expected total trips	843	554	554	554
Closed Area I	-	277	277	-
Nantucket Lightship Area	281	-	277	277
Closed Area II	562	277	-	277

6.1.1.1.2 Other management measures in the proposed action

The above analysis describes the predicted impacts of controlled access to the scallops found within the access areas (Section 4.1.1), including the proposed action for the new mechanical rotation strategy and fishing mortality targets. The following discussion analyses the direct and indirect effects on the scallop resource from the habitat closed areas, minimum dredge ring size, minimum twine top mesh, finfish possession limits, access seasons, observers funded by a TAC set-aside, enforcement provisions, reporting requirements, allocations to part-time and occasional scallop vessels, and allowing access by vessels with general category scallop permits. In most cases, the analysis is provided in Section 6.2 and the rationale for the choice is given in Section 4.1. Further discussion and summary of impacts on the scallop resource, with an emphasis on the proposed action, is given below.

6.1.1.1.2.1 *Habitat closed areas*

Habitat closed areas remove scallops from the biomass that is available to the fishery. Due to low rates of movement by adult scallops, spawning and predation are the main effect of high scallop biomass in closed areas. Scallops are prolific spawners with a pelagic larval stage, allowing the spawn to be distributed widely, depending on timing and water current. Some studies of larval drift and water currents during spawning around these areas suggest that the scallop larvae are retained in the counter-clockwise gyre around Georges Bank, with some SW transport of larvae across the Great South Channel and the Nantucket Lightship Area. People have speculated that some of these larvae settle in the northern portions of the Mid-Atlantic resource area, but there is no definitive data to prove this phenomenon. Thus, the scallops that remain in closed areas may contribute to spawning potential, but it is probably only important when the resource is depleted, since otherwise there is plenty of spawning potential in the stock elsewhere.

Although the migration of adult scallops is very slow and generally of random direction (this was described in detail within the FSEIS for Amendment 10), scallops near the borders of the EFH closed areas (areas where scallop fishing will not be allowed) may act to re-supply the nearby scallop beds outside of the closed areas. Otherwise mortality on large scallops that remain in the EFH closed areas would eventually take its toll, recycling the energy and nutrients through the local environment.

Thus, the main effect of habitat closures on the scallop resource is to reduce yield, unless the scallop stock is depleted. If depleted due to overfishing elsewhere or long periods of poor recruitment, adult scallops in the habitat closed areas may ensure spawning activity, essentially an insurance policy. On the other hand, the habitat closed areas include some very productive scallop resource areas, particularly in the southern part of Closed Area I and the northern part of Closed Area II.

Amendment 10 estimated the effects on yield and the impacts from the adjustment to the habitat closed areas are not substantial. Most of the change in impacts occurs in the Closed Area I boundaries, and the new habitat closures make about as much scallop biomass available as they remove from the fishery. The TACs for the two habitat closure alternatives in Closed Area I are nearly the same.

6.1.1.1.2.2 *Gear restrictions*

There is little direct impact on the scallop resource within the proposed access areas from allowing vessels to use trawls. Although trawls tend to allow fishermen to target small scallops, the scallop resource in the access areas is composed of mainly large scallops. Also, NEFSC 2001 found no evidence that the Georges Bank groundfish closed areas had an effect on recruitment within the areas.

This implies that other than by removal as catch, the scallop fishery with either dredges or trawls does not impact scallop recruitment through alteration of the bottom.

Indirectly, requiring scallop vessels to use dredges has an impact on potential yield. Since scallop trawls are likely to catch large amounts of yellowtail flounder and other flatfish, the TACs for minimizing groundfish bycatch could prevent the fishery from catching the optimum yield of sea scallops. Thus, requiring vessels to use dredges could allow a higher yield than allowing scallop vessels to use scallop dredges and trawls.

Similarly, twine top mesh and configuration has little direct effect on the scallop resource. There may be some added escapement of small scallops through the mesh, but the effect in the access areas is likely to be insignificant. Indirectly, the twine top mesh improves escapement of some finfish species and could allow the proposed access program to produce optimum yield under constraints on finfish bycatch.

6.1.1.1.2.3 Groundfish catch limits

A TAC for yellowtail flounder bycatch could reduce scallop yield, if it requires closing the access areas prematurely, i.e. before the landings reach the scallop TACs. Indirectly, the effect on the scallop resource is much like a habitat or groundfish closure area, making less scallop biomass available to the fishery. Eventually the uncaught scallops will stop growing (many scallops in the groundfish closed areas are large and have low growth rates) and succumb to natural mortality.

The proposed action, however, changes the rotation order and fishing mortality targets from those analyzed in Amendment 10. These changes reduce the expected annual finfish catches and increase the probability that the access areas would remain open for the season. Under certain circumstances, the industry may take voluntary action to avoid bycatch if a finfish TAC exists. These voluntary actions would allow the access areas to remain open, increasing the availability of scallops to the fishery while minimizing bycatch and bycatch mortality.

6.1.1.1.2.4 Finfish possession limits

There is little direct effect on the scallop resource from the proposed finfish possession limits. Mainly, the possession limits are intended as a disincentive to stay in areas where bycatch is higher than normal and seek scallops in other parts of the access areas where finfish catches are lower. Although fishing for other species besides scallops on a scallop DAS would be very unlikely under current conditions, the finfish possession limits also keep fishermen from targeting groundfish in the closed areas during the access program.

6.1.1.1.2.5 Access seasons

Due to seasonal changes in meat yield⁵⁴ from the scallop spawning cycle, access seasons have a direct effect on the mortality associated with a scallop TAC. The scallop TACs were calculated on the basis of an annual average meat yield at scallop size, since it is difficult to predict when fishing will take place and spawning activity varies annually and by area.

⁵⁴ Meat yield is the weight of scallop meat for a given size scallop. A 110 mm scallop has a higher meat yield in the spring than it does in the fall, during spawning. Meat count, on the other hand, is the average number of scallops per pound in the catch, regardless of size. It is a function of the size frequency of scallops in the catch and the meat yield.

If scallop fishing takes place during the spring when the meat yield is highest, the access program would generate landings at the TAC amount with less fishing mortality and effort (and also bottom contact time). All things being equal, it would also minimize habitat impacts and bycatch by reducing the total amount of fishing time and area swept. Conversely, more scallop yield could be produced with the same impacts on the environment as the case if the fishing effort is spread throughout the year.

During the fall, scallops on Georges Bank divert more energy toward spawning and meat yield declines. As a result, more scallops could be harvested than anticipated if the fishing occurs mainly during the fall spawning season. Some of this effect is balanced by inter-annual growth of the individual scallops, particularly for the quicker growing scallops less than 110 mm. Since most scallops in the access areas are large and growth is slow, the seasonal change in meat yield is important. If the fishing activity is focused mainly during the fall spawning season when meat yield is lowest, a TAC would generate more fishing mortality and effort than anticipated, increasing fishing time, area swept, and potential impacts on habitat.

A major concern, however, was groundfish bycatch during the springtime. is uncertain (bycatch estimates were derived from sea sampling conducted during June 15, 2000 to January 31, 2001) and could be higher than in the fall (spawning activity for most species peaks in the spring and many species aggregate in the closed areas to spawn; Closed Area I and Closed Area II were originally closed during the spring to avoid fishing during peak spawning activity for cod and haddock). In addition, the Council was concern about the possibility that fishing activity could disrupt cod spawning. These concerns were given more weight than the effect of additional mortality on the scallop resource, caused by concentrating fishing effort during the fall spawning period.

6.1.1.1.2.6 At-sea observers

There is no direct effect of the proposed observer program on the scallop resource. Since the program would be funded by a TAC set-aside, it also would not change the amount of expected fishing effort or scallop mortality. The program however does effect total revenue for the scallop industry, but these economic effects are discussed elsewhere in this document.

6.1.1.1.2.7 Enforcement provisions

Trip declaration, landing requirements, and more frequent VMS polling have no direct impacts on the scallop resource. The direct impacts are mainly on the compliance cost, which are discussed elsewhere in this document. The more frequent VMS polling can, however, have an indirect effect on the scallop resource by collecting better position information. These data can be used in assessments to analyze the resource, the effects of fishing, and the effectiveness of management measures.

6.1.1.1.2.8 Part-time and occasional trip and DAS allocations

Since the total amount of trips, DAS use, and expected landings are expected to remain nearly the same as for the status quo, this proposed action is not expected to affect the scallop resource.

6.1.1.1.2.9 Area access for vessels with general category scallop permits

Since the number of trips that may be taken in the access areas is limited by a TAC set-aside, no direct effect on the scallop resource is anticipated. Nonetheless, the added fishing opportunities could attract capital to an open-access, lightly-regulated fishery, a major concern of the Scallop Plan Development Team.

Compliance costs for vessels using a general category permit to target scallops are considerably higher than they are in the open fishing areas, in relationship to the amount of revenue from landings. In addition, the access areas are considerably farther from shore than the normal scallop fishing areas for boats with general category permits. Inshore vessels that sometimes target scallops may spend funds to upgrade their vessels for offshore fishing. There are no limits on vessel upgrading, other than those that pertain to the vessel according to other fishing permits. Offshore vessels mostly use general category permits to land incidental scallop catches when targeting other species with trawls and other gears. Some offshore fishermen may decide to modify the vessel and purchase new dredges to target scallops in the access areas.

In either case, if there is a marginal economic benefit for the vessel, this proposed action could allow fishing effort and fishing power to increase. When the areas close to scallop fishing or scallop yield declines, vessels that have upgraded to fish in the access areas will look for other opportunities in the scallop fishery. If the added mortality is taken into account, it could reduce the limited access DAS allocations in the long run. If not taken into account, it could cause mortality to exceed the target or maximum threshold. At the very least, it could entice capitalization in a lightly-regulated fishery and create new stakeholders with interests in offshore scallop fishing.

At the present time, however, some vessels with general category permits have been unable to fish in the access areas that were formerly closed due to groundfish regulations. Many of these vessels are also facing more stringent regulations in other fisheries. Scallop landings by vessels with general category permits have been a small fraction of the total and appear to have declined when scallop prices declined from over \$5.00 per lb. in 1999 to under \$3.50 per lb. today. Taking these considerations into account, there is no immediate threat to the scallop resource by allowing vessels with general category permits to target scallops in the access areas. Over the longer term, the Council believes that the FMP has the tools needed to address these concerns should they develop.

6.1.1.2 Groundfish

Catches of regulated groundfish in the proposed access areas are expected to be less than 10% of the overall TAC in the Multispecies FMP to meet the groundfish mortality targets (see Section 6.2.5.1.1). This amount is less than a level that the Groundfish PDT identified as having a possible repercussion for meeting the groundfish mortality targets and having an effect on rebuilding overfished groundfish stocks. Yellowtail flounder is one species that the bycatch projections exceeding the 10% value, and for that species the proposed action sets a hard TAC for the access program that applies to each yellowtail flounder stock⁵⁵.

Thus, the groundfish catches in the access areas is expected to be limited and have a de minimis effect on groundfish biomass and overall mortality. More importantly, these catches are expected to be offset and possibly exceeded by reducing groundfish bycatch through reductions in effort

The proposed action includes two measures that could affect groundfish stocks. First, it changes the habitat protection areas adopted by Amendment 10 to the Scallop FMP so that they match the areas adopted by Amendment 13 to the Multispecies FMP. Second, it adopts a program that will allow scallop dredge fishing to take place in areas closed to protect groundfish stocks. These measures are not expected to have an adverse impact on groundfish resources or the groundfish fishery.

⁵⁵ The Nantucket Lightship Area falls within the boundaries of the Southern New England/Mid-Atlantic yellowtail flounder stock area. Closed Area I and Closed Area II fall within the Georges Bank yellowtail flounder stock area.

The habitat protection areas adopted by Amendment 10 to the Scallop FMP defined areas that were closed to scallop fishing in order to protect scallop EFH. Amendment 13 to the Northeast Multispecies FMP defined areas that were closed to mobile bottom-tending gear – including scallop dredges - to protect groundfish EFH. The areas closed under the respective amendments protected different areas in the vicinity of the Nantucket Lightship Closed Area (NLSA) and Closed Area I (CAI). Amendment 10 provided habitat protection to a larger area inside the NLSA but did not include the trapezoid area outside the NLSA. The additional area inside the NLSA, however, was determined not to be practicable for protection of groundfish resources in Amendment 13. In CAI, Amendment 10 provided protection to a wedge-shaped area that differed slightly from that adopted by Amendment 13. The Amendment 13 proposal was determined to better define the area that should be protected for groundfish by Amendment 13. By adopting the same habitat protection scheme as Amendment 13, this action adopts the level of protection for groundfish resources that was deemed practicable in Amendment 13.

The Northeast Multispecies FMP relies primarily on effort controls to control fishing mortality, including five year round closed areas. These areas were adopted over time for various reasons, but are generally accepted as designed to control groundfish mortality and provide protection to key spawning areas. In addition, mobile bottom tending gear has been prohibited in portions of these areas to protect groundfish EFH. The closed area access program implemented by this action could affect groundfish resources in the following ways:

- By changing the amount of groundfish caught by scallop dredges;
- By interfering with spawning activity in the closed areas (access is only granted to the three of the five year round closed areas);
- By damaging EFH in the closed areas;
- By interfering with access to the resource or markets by groundfish vessels.

The access program is subject to a number of constraints that make it unlikely that it will result in an increase in the amount of groundfish caught by scallop dredges. Scallop fishing causes incidental catches of groundfish, but the most significant catch is of yellowtail flounder, with only very small quantities of other species (Section 6.2.5.1.1.4). To control the catch of yellowtail flounder, the Council adopted a number of restrictions. First, all scallop dredges must use 10-inch twine tops, a modification that has been proven to significantly reduce catches of flounders. Second, there is a high level of observer coverage required in the programs so that incidental catches can be accurately tallied. Third, a hard TAC incidental catch limit for GB and SNE/MA yellowtail flounder has been included to control bycatch mortality. Once these TACs are caught, scalloping in the closed areas will cease. The TACs have been specifically designed so that if the entire TAC is caught, it will not result in catches of yellowtail flounder that are inconsistent with the management program adopted by Amendment 13.

Behavioral changes that may result because these TACs are implemented are subject to some debate. On the one hand, they may discourage fishermen from fishing in areas with high yellowtail flounder catches in order to catch higher-value scallop resource. Some argue, however, that these TACs may encourage a derby fishery to harvest the scallops as quickly as possible without regard to yellowtail flounder bycatch. If this alternative behavior occurs, the most damaging result will be a failure to harvest the available scallop yield since the access program may close earlier than anticipated. Even under this scenario the hard TAC will limit yellowtail flounder catches to those consistent with Amendment 13. Fourth, the access program shifts fishing effort from outside the closed areas to inside the closed areas. The impacts of this shift in effort on groundfish are difficult to quantify, because the finfish bycatch for scallop trips occurring in neighboring open fishing areas have not been sampled well. Access combined with open area DAS reductions may reduce groundfish incidental catches by scallop vessels since overall it will result in less fishing time to catch the available scallop resource. More importantly, it will place dredge vessels under a hard TAC for yellowtail flounder for a considerable amount of fishing time. Fifth,

the program increases the amount of yellowtail flounder that scallop dredge vessels are allowed to retain to 1,000 lbs. per trip (the current limit is 200 lbs. per trip). While this will not change the amount of yellowtail caught, it will allow scallop vessels to land more of their incidental catches rather than discard them at sea, reducing bycatch. This increased possession limit is unlikely to encourage targeting of yellowtail flounder because of the large price difference between scallops and yellowtail flounder. Finally, the program is limited to periods when fish are not aggregated for spawning. This will help keep incidental catches consistent with estimates based on available observer data.

Although the proposed access area program would potentially increase the bycatch of groundfish and yellowtail flounder in the areas that are otherwise closed to control groundfish mortality, the net effect of such action is expected to be positive because of the proposed effort reduction for open area DAS, although it is difficult to quantify. This is because according to the scallop overfishing definition fishing mortality target strategy, the proposed action will also reduce open area DAS allocations. Moreover, the amount of fishing time per DAS used in the access areas is considerably less than that in open fishing areas, due to the high catch rates and limited shucking capacity on a scallop vessel with seven crewmembers. Since bycatch in an area is directly proportion to the amount of fishing time, or total area swept, this value and where the effort occurs are a very important considerations.

In the open fishing areas, vessels often fish 18 to 24 hours per day. The 2003 average catch per day was estimated to be about 1,250 lbs./day in the Georges Bank region and 1,800 lbs./day in the Mid-Atlantic region. Particularly in Georges Bank, this rate is much less than the crew's ability to process the scallops, so fishing typically occurs around the clock. Including gear-handling time, this means that the gear is on the bottom fishing for 20 to 22 hrs./day when vessels customarily tow for 90 minutes. In contrast, the maximum landings in the controlled access areas is expected to be 2,400 to 3,000 lbs./day, but the catch by the gear is expected to be much higher than that. The amount of fishing time per DAS is thus reduced by the ratio of the vessel's catch to the crew's shucking capacity. Catches of 40 bushel, or 320 lbs. per dredge, on a tow lasting 10-15 minutes are not uncommon. Thus the actual fishing time per DAS drops to 1 to 3 hrs./day in the access areas.

This ratio of dredge catch to a vessel's shucking capacity was used in the projection model and multiplied by the dredge width to estimate area swept. The model also makes some simple assumptions about the distribution of fishing effort by region, because it has been observed that about 1/3rd of scallop fishing effort occurs in the Georges Bank region when the daily scallop catch in the two regions are equal. Differences in the daily catch rate influences this ratio, a factor taken into account by the projection model (see the Amendment 10 FSEIS, Appendix IV for a description of the method). When the daily scallop catches are higher on Georges Bank than in the Mid-Atlantic, more than 1/3rd of the scallop fishing effort occurred there, and vice versa.

Changes in scallop biomass have an effect on this ratio and were also used to predict future bycatch in the access areas (see Section 6.2.5.1.1). What is not known is how much effort would occur in the Mid-Atlantic vs. the Georges Bank region with a reduction in open area DAS. Due to the distribution of groundfish, most of the groundfish bycatch on scallop trips occurs on trips in the Georges Bank region, thus changes in scallop fishing effort in the open Georges Bank areas are important.

Taking the changes in scallop catches into account and the historic distribution of scallop fishing effort in relationship to the relative catch rates, combined with the DAS allocations and expected fishing time per DAS, the biological projection model (see Section 6.2.5.1.1.4) estimates total area swept by region.

With access, the estimated area swept in the Mid-Atlantic region is expected to decline from 3,000 nm² in 2003 to 2100 nm² in 2004, a decline of 30% (Figure 7). More DAS allocations are needed

in 2005-2006 without access (i.e. “No Action”) to achieve the $F=0.2$ scallop mortality target, so area swept in the open areas is expected to shoot up to nearly 9000 nm² in 2006, before dropping to 3,500 nm² when the Elephant Trunk Area re-opens for scallop fishing. After 2004, the area swept in the Mid-Atlantic region is 58 to 67% less with access compared to No Action.

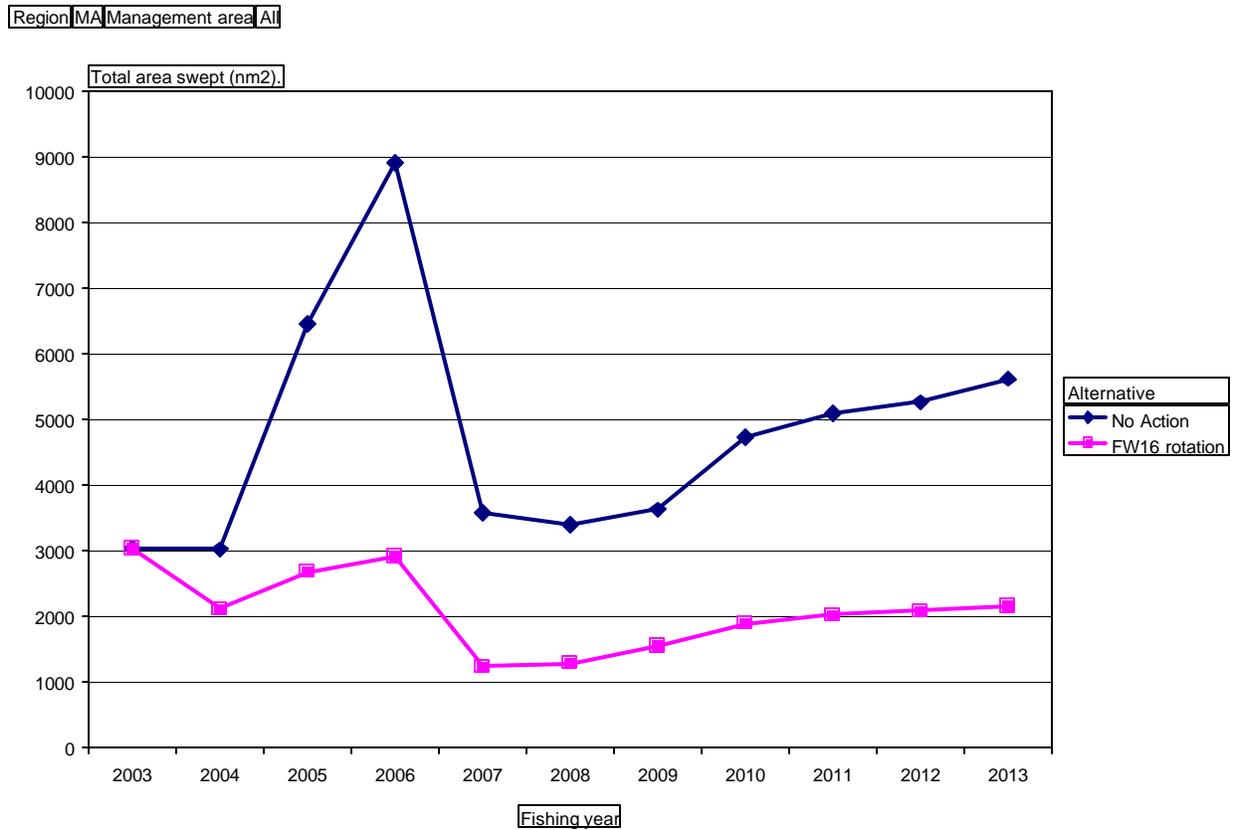


Figure 7. Difference in projected total area swept (nm²) in the Mid-Atlantic region.

Groundfish are not found in abundance within the Mid-Atlantic region, so have very little bearing on groundfish mortality and impacts on the groundfish resource. Scallop fishing effort in the open Georges Bank areas is an entirely different story.

Accounting for the historic effort distribution in relationship to scallop catch rates by area, the projection model predicts a substantial decrease in fishing time and total area swept for the Georges Bank region as well. Nearly 50% of the projected scallop effort is expected to occur in the Great South Channel vicinity (Figure 8), so reductions in fishing effort are likely to effect vulnerable groundfish found more frequently in that area (yellowtail flounder and American plaice).

Region GB Fishing year 2004 Alternative No Action

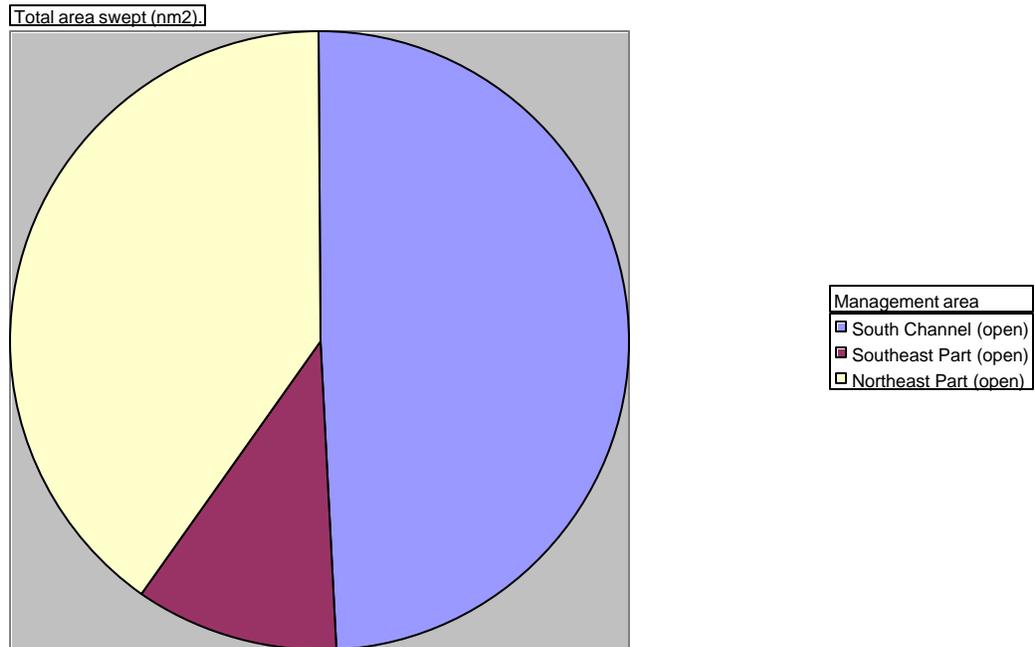


Figure 8. Proportion of 2004 fishing effort by region with no access (“No action” alternative).

According to the projection model for the No Action alternative, total fishing time (area swept) is predicted to decline from 1,750 nm² in 2003 to 900 nm² in 2005, and then varying between 1,000 and 2,000 nm² (Figure 9). In contrast, the projection model predicts a faster decline and more stable low amounts of fishing time in the open areas of the Georges Bank region, declining to 350 nm² by 2005 and then remaining below 1,000 nm² through the ten-year projection. This is 36 and 62 percent less than the No Action alternative in 2004 and 2005, respectively. After that, the total fishing time (area swept) is projected to be 44 to 78 percent less than that with no access (“No Action”). Therefore, a substantial reduction of groundfish bycatch on open area trips is expected from the proposed action.



Figure 9. Difference in projected total area swept (nm²) in the open portions of the Georges Bank region.

Overall, the net change in Georges Bank region total area swept with access is also lower than the No Action alternative (Figure 10). During 2004 and 2005, total area swept is projected to decline from 1,750 nm² in 2003 to less than 700 nm² with access. The total area swept is 15 to 23 percent lower in 2004 and 2005, respectively, with access compared to No Action without access. After 2006, the total area swept in the Georges Bank region is projected to average 50% less with access compared to No Action.

Thus, if groundfish bycatch in the proposed access areas during June 15 to January 31 is equal or less than the groundfish bycatch in the open areas during the entire year when scallop fishing occurs, the proposed access program is expected to minimize bycatch and the net effect on groundfish bycatch is expected to be positive. If the groundfish bycatch is higher than anticipated, the 10% TAC limit for yellowtail flounder would act as a brake on the access program and close the access areas to scallop fishing for the year. This would also limit the catches of other regulated species, because yellowtail flounder are one of the most vulnerable species to capture by scallop dredges. If the yellowtail flounder catches are higher than anticipated, this would reduce the benefits from the area access program and the Council could consider different seasonal or other restrictions to control groundfish bycatch.

Region GB Management area AI



Figure 10. Overall change in total area swept projections for the Georges Bank region, including access to the Georges Bank groundfish closed areas with the “FW16 rotation” scenario.

The groundfish closed areas – particularly CAI and CAII – are also intended to protect spawning aggregations of groundfish (see Section 6.2.7.1.2). Groundfish spawning activity occurs through much of the year, though for most stocks the key months are January through June. There are distinct peaks in spawning activity even within this block, depending on species. The proposed action would allow scallop fishing only during June 15 to January 31, however. The access program thus will not interfere with the peak spawning activity that occurs in the closed areas at this time. Compared to the No Action alternative, the access program does not change the impact of the fishery on spawning groundfish. (It should be reiterated that specific evidence that dredge activity interferes with spawning is not available; the assumption of possible interference is based on limited studies of the behavior of spawning fish and their reaction to trawl nets, a far different fishing gear).

The areas that are opened to scallop fishing are only those that are not closed to mobile gear by Amendment 13 to protect EFH. As a result, the program is not expected to have a significant impact on groundfish EFH and the impacts are not any different than under the No Action alternative.

Amendment 13 to the Northeast Multispecies FMP imposes additional effort reductions on groundfish fishing vessels in order to reduce fishing mortality. Scallop catches of groundfish could affect access to the resource by groundfish vessels in several ways. If scallop vessels increased their catch of groundfish to levels that threatened the mortality reductions in Amendment 13, groundfish vessels could be subject to additional effort reductions in the future. Because the only species caught by scallop dredges in any appreciable amount – yellowtail flounder – is restricted by a hard TAC, this is unlikely to occur. Amendment 13 also adopts a hard TAC on GB yellowtail flounder as part of the implementation

of the US/CA Resource Sharing Understanding. Once this TAC is caught, fishing in statistical areas 561 and 562 while on a groundfish DAS and possession of yellowtail flounder throughout the stock area would be prohibited. High catches of yellowtail flounder by scallop vessels could, in theory, result in closing this area. The hard TAC limit, however, makes it unlikely that this will occur before US groundfish vessels have the opportunity to harvest the resource in this area. The proposed access program also allows scallop vessels to land more yellowtail flounder under a 1,000-pound possession limit. It is unlikely that this will have a significant effect on markets. Groundfish fishing trips with trawls in this area typically land 25,000 to 30,000 lbs. per trip, so the additional scallop dredge landings will not have a significant affect on supplies and prices.

To summarize the aggregate impacts:

- The proposed action will not result in a change in groundfish catch by scallop vessels that will threaten the objectives of Amendment 13. It is possible the action will reduce catches of yellowtail flounder by dredge vessels and it may result in reduced discards as well.
- The proposed action will not interfere with groundfish spawning in the closed areas.
- The proposed action will not result in damage to areas closed to mobile fishing gears in order to protect groundfish EFH.
- The proposed action will not affect access to the fishery or markets by groundfish vessels.

6.1.1.3 Skates

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. Since this framework action proposes to lessen restrictions as assessed in the skate baseline review, the Skate PDT must evaluate whether this action will have negative impacts on overall mortality of skate species in a formal rebuilding program. Section 7.1.4 evaluates the impact of this action on skate mortality, and concludes that the slight increase in total allocated DAS and access into portions of the groundfish mortality closed areas will not have negative impacts on skate mortality.

This action is not expected to have negative impacts on skates in a formal rebuilding program (thorny and barndoor). In fact, this framework action will have very little, if any, impact on thorny skate mortality because the primary objective of the access program is to concentrate scallop effort in the access areas on Georges Bank, which are on the periphery of thorny skate distribution. As for barndoor skates, the primary justification for inferring that the proposed scallop access program would not substantially increase barndoor skate mortality is that the recovery trend of barndoor has continued, even accelerated, during and after the last access programs. Barndoor biomass has increased steadily since 1998 despite the two scallop access programs (in 1999 and 2000). Therefore, this action is not expected to have negative impacts on barndoor skate rebuilding. While total allocated DAS is expected to slightly increase in 2004 as compared to the level assessed in the skate baseline, allocated DAS will reduce substantially after 2004 under a rotational area management strategy.

6.1.1.4 Other managed species

Other managed species that are affected by the action include monkfish (managed by the NEFMC) and summer flounder (managed by the MAFMC). Monkfish occur in both the proposed access areas and in the open areas of Georges Bank and the Mid-Atlantic regions, and are one of the main components in the scallop fishery catches. Summer flounder occur primarily in the Mid-Atlantic region and along the southern flank of Georges Bank and Southern New England, but usually are a small component of the bycatch for vessels targeting sea scallops.

Monkfish are often caught by scallop dredges when targeting sea scallops in many areas, but have been a significant part of the vessel's revenue at various times over the last 15 years. In fact, when scallop catches and revenue were low, many limited access scallop vessels have a history of targeting monkfish with scallop dredges. Because of this and the low survivability of monkfish after discarding, the Monkfish FMP allocates fairly generous trip limits for vessels on a scallop DAS, 300 lbs. tail-weight per DAS. In addition, some scallop vessels qualify for a limited access monkfish permit that allows them to catch and land more than this limit for 40 DAS to be counted against the limited access scallop DAS allocation.

Monkfish appear to be nearly as abundant within the access areas as they are elsewhere, based on the estimated bycatch in the 2000 access program. No targeting of monkfish was observed and targeting monkfish with a controlled access DAS is very unlikely due to the high catches of more-valuable scallops. With the proposed action and alternative rotation schedule, the daily catch rate is expected to vary between 175 to 332 lbs./day during 2004-2007 (Table 125). These are estimates of annual average catches per DAS, so conditions and catches will vary on individual trips made at various times of the year. Nonetheless, increases in discarding of monkfish are not expected because the catches are not substantially greater than the daily monkfish possession limit that applies on a limited access scallop DAS. Monkfish catches may decline overall, however, due to reductions in total fishing time that are anticipated with access.

Summer flounder, on the other hand, are a very small component of the bycatch in the proposed access areas (see estimates in Table 111 to Table 113). They are more prevalent and a greater component of the bycatch in the Mid-Atlantic region, however. Thus the expected reductions of fishing effort in the Mid-Atlantic region and the open portions of the Georges Bank region are likely to reduce summer flounder catches under the proposed action. This reduction cannot be quantified, however, due to insufficient sea sampling in areas where summer flounder are more available to the fishery.

6.1.2 Summary of Aggregated Habitat Impacts

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. This section will demonstrate that the overall habitat impacts of all the measures combined in this action have neutral impacts on habitat, compared to the habitat benefits that will result from implementation of Amendment 10 of the Scallop FMP and Amendment 13 of the Multispecies FMP. Two management measures that will be implemented by this framework action that are likely to have direct habitat impacts are the modification of habitat closed area boundaries that were originally adopted in Amendment 10 to the Scallop FMP and the definition of which areas within the existing Groundfish closed areas will be opened for limited, rotational, access for scallop fishing.

This framework action proposes to modify the habitat closed areas originally proposed for implementation in Amendment 10 to the Scallop FMP to make them consistent with the habitat closed areas proposed in Amendment 13 to the Multispecies FMP. Elimination of the conflicts between the two FMPs will result in the closure of the same areas to gears used in both fisheries, thus providing more effective protection of benthic EFH from the adverse effects of fishing.

Access into portions of the groundfish mortality closed areas has been granted to the scallop fleet in previous frameworks. Continued access was anticipated in the analysis of Amendment 10, therefore granting access through this framework will not increase impacts beyond that which was recognized as part of the Amendment 10 baseline. The specific access areas are slightly different than access areas in

previous frameworks; the access area in the center of Closed Area I has shifted to the south, the access area in the Nantucket Lightship Area has expanded to about one-third of the total closed area (eastern portion only), and the access area in Closed Area II is the same as in previous framework actions. The EFH value of this access option is not significantly different from the EFH value of the other access options. The overall substrate composition of the four access alternatives is also similar; they are all primarily sandy bottom. More recent preliminary substrate data suggest that the southern portion of the Closed Area I proposed access area may be more complex than the area previously opened. Even if the proposed access alternative does open more complex bottom than previous access programs, it is probable that the overall habitat impacts are neutral because there is added habitat protection from the addition of habitat closed areas on Cashes Ledge, Jeffrey's Bank, and the northern part of the Nantucket Lightship Area (over 500 square nautical miles). These areas that were identified as important for habitat conservation represent a variety of substrate bottom that may compensate for the potential "loss" of the southern part of Closed Area I that is proposed for access (about 215 square nautical miles).

The EFH analysis shows that the total EFH area within the proposed access areas is slightly more than the access areas implemented in previous frameworks (Alternative 1). 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 does not outweigh the economic costs of preventing the scallop fleet from accessing this area. About 2/3rds of scallop biomass in the access boundaries for Closed Area I is within the southern part of the access area, therefore preventing access into this area is not practicable (Table 27; compared to Table 23, Table 25, and Table 29).

This framework action also proposes to make the habitat closed areas originally proposed in Amendment 10 to the Sea Scallop FMP consistent with those approved in Amendment 13 to the Multispecies FMP. This will improve the practicability of the habitat closed areas and eliminate conflicts between the two FMPs. Portions of the habitat closed areas proposed in Amendment 13 are outside of the original groundfish mortality closed areas, so will be additional area protected from scallop gear.

The hard TAC for yellowtail bycatch, TAC set asides for research, access season of June 15th - January 31st, and many of the other actions proposed in this framework action will not have direct impacts on EFH. Therefore, based on a comparison of the habitat impacts of the modified habitat closed areas and the preferred access alternative proposed for implementation in this framework action with the habitat management actions adopted in Amendments 10 and 13, the habitat impacts of the proposed action are neutral, and no additional measures are necessary to minimize impacts of the fishery on EFH.

6.1.3 Summary of Aggregated Impacts of Management Measures on Endangered and Other Protected Species

As has been discussed in a number of Council and NMFS documents, sea turtle interactions with the scallop fishery are the focus of discussions relative to protected species. While interactions with the scallop gear could take place between the North Carolina/South Carolina border and Cape Cod, Massachusetts (see Figures 11 to 15 in Amendment 10), they are expected to be more prevalent in the Mid-Atlantic where turtles occur for longer periods of time and at higher concentrations than in New England waters, where Framework 16 proposes access and allocates scallop fishing effort.

To date, highest turtle bycatch rates in the Mid-Atlantic have occurred during the summer season (July-September), while the lowest rates have been observed during the May-June period. Fishing effort peaks in the region during May through August resulting in serious injury or mortality, particularly to loggerheads, as a result of encounters between scallop gear and turtles.

Given that the focus of Framework Adjustment 16/39 is to allow scallop vessels to fish in areas of Georges Bank that would otherwise be closed to scallop dredge gear, the program overall is inherently beneficial to sea turtles as the result of a potential shift in effort. Such a shift from the warmer waters of the Mid-Atlantic during the turtle high use season would benefit all turtle species that occur there on a number of levels. Analysis in Section 6.1.1.2 discusses the expected overall decline of fishing time (measured as area swept) in the Mid-Atlantic region after 2004 as a result of the access program and higher open area scallop biomass in the future. Further, overall scallop effort in open areas by scallop vessels participating in the program would decline as a result of lower DAS allocations, and finally, the periods during which the access areas are proposed to be open to scallop fishing are unlikely to impact sea turtles because of their low numbers in the Georges Bank region.

Potential increases in effort as a result of increased participation by general category vessels, exchanges of controlled access that could result in an increase in effort in the Mid-Atlantic region (only possible if a limited access vessel trades to get Georges Bank region controlled access trips which might be used to fish in open areas if the access areas close when yellowtail flounder catches reach the TAC), and shifts in effort resulting from the timing of the approval the action, or lack thereof, are among the measures that may have unknown or negative consequences to protected species. Other measures such as the TACs, trip limits, bycatch caps, and administrative provisions will have little and likely no impacts on sea turtles.

Due to restrictions in controlled access trip use in this framework adjustment, the impacts are unlikely to be any worse for sea turtles than that anticipated and analyzed in the Amendment 10 FSEIS. Bearing in mind that it is nearly impossible to predict market conditions, the influence of other regulatory programs and a host of other factors that affect fishing behavior, none of the measures described above and included in the action are expected to change the Council's determination that the program should be at least neutral for sea turtles and is more likely to be beneficial as a result of the potential reduction in scallop fishing effort where and when turtles are present.

6.1.4 Summary of Aggregated Economic Impacts

The section provides a cost/benefit analysis of the alternatives proposed by the Council through Framework action 16 to the Sea Scallop FMP. The regulatory guidelines require that the economic impacts of the proposed options be compared relative to the impacts likely to occur if "no action" is taken. No action here refers to no access and scallop fishing in any part of Closed Area I (CAI), Closed Area II (CAII), or the Nantucket Lightship Area (NLSA) for the foreseeable future. The status quo scenario is based on the same assumption, i.e., no access, but with total fleet effort constrained at the current levels by potential Framework action, at about 24,000 DAS, in order to achieve optimum yield from the scallop resource. The economic impacts of access to the Georges Bank groundfish areas (CAI, CAII, and NLSA) are summarized for Amendment 10 (A10) and Alternative mechanical rotation options. The economic impacts with access are compared to the no action and status quo scenarios with no access.

The economic impacts are determined by the level of scallop landings, fishing effort, LPUE, and by the size and price of scallops for each rotation and access alternative. Table 56 shows that the proposed access to the Georges Bank Groundfish Areas will result in lower annual landings, about 3 to 4.4 million lbs. less on average during the 2004-2007 period, compared to the no action scenario for both Amendment 10 and alternative rotation strategies.

- Table 56 shows that in 2004 total landings will be 55.8 million lbs. with access but only 48.6 million with no access. After 2004, however, landings with no access will exceed landings with access, resulting in lower landings per year as an average of the years 2004 to 2007.

This is because, in the absence of access, DAS allocations for the open areas will be higher so that the vessels will fish and land more scallops from open areas.

- These results differ considerably from Amendment 10 landing estimates with and without access. Amendment 10 estimated that scallop landings from the open areas would be about 37 million per year as an average during 2004-2007, if no access was provided to the Georges Bank groundfish areas. Landings with access were estimated at 57 million per year for the same period. Partly because of the large year class in the Mid-Atlantic area and the decline in biomass in the southern portion of Closed Area II, however, the updated biological projections showed that landings without access to the Georges Bank groundfish areas will reach about 59 million per year during 2004-2007, whereas access will produce from about 54.7 million (A10 rotation, access alternative 1) to 56.2 million (Alternative rotation, access alternative 4) in scallop landings.

Table 56. Landings with no access (no action) and with alternative mechanical rotation and access (alternative 2)

Year	Alternatives	Open areas	Access areas	All areas
2004	With access	39.55	16.26	55.80
	With no access	48.56	-	48.56
2005	With access	43.29	11.08	54.36
	With no access	63.70	-	63.70
2006	With access	43.20	9.62	52.82
	With no access	59.02	-	59.02
2007	With access	50.79	12.73	63.52
	With no access	65.39	-	65.39
2004-2007	With access	44.20	12.42	56.63
	With no access	59.12	-	59.12
2008-2013	With access	49.14	7.41	56.55
	With no access	54.83	-	54.83

6.1.4.1 Overview of Economic Impacts

The economic impacts of higher landings with no access compared to access alternatives are shown in Table 57 for 2004 to 2007 and in Table 59 for the long-term impacts. The results are summarized below:

- Overall, access to the Georges Bank groundfish areas will not have a significant impact on the average fleet revenues per year during the 2004-2007 period. Access with A10 strategy will result in slightly lower average revenue per year for the scallop fleet under all access alternatives relative to the no action, no access scenario. Alternative rotation strategy with access, with the exception of access alternative 2, will generate marginally lower revenues per year from scallop fishing compared to no action, no access values. Access alternative 2 will increase fleet revenues compared to no access, although this increase is negligibly small (Table 57).
- The producer benefits will be positive, however, because of lower fishing costs with access as shown in Table 58. Producer surplus is measured by total revenues net of operating expenses, and it includes both vessel profits and crew income. The cumulative present value of the

producer surplus net of no action values is estimated to exceed \$30 million during the 2004-2007 period for all access alternatives.

- Access to the Georges Bank groundfish areas will have positive impacts on gross profits of the scallop fishery. This is due mainly to the decline in the operating expenses by almost 30% with access compared to no access (Table 65). Because LPUE in the Georges Bank groundfish areas will be higher than the LPUE in the open areas, operating expenses per pound of scallop will be lower with access compared to no access. As a result, gross profits are estimated to increase by 17% to 18% in the short-term (2004-2007), and by more than 20% in the long-term due to access to the Georges Bank groundfish areas (Table 66).

During the 2004-2007 period, access to the Georges Bank groundfish areas is estimated to have negative impacts on total benefits because of lower landings with access relative to no action. Total economic benefits, as measured by the sum of the producer and consumer surpluses, will decline by approximately \$12 to \$26 million if access is provided with Amendment 10 rotation. This decline is due mainly to the decline in consumer benefits (by \$43 million to \$56 million) with lower landings and higher prices with access (Table 58). The negative impacts are smaller, however, if alternative mechanical rotation strategy is adopted. With access alternatives 1 and 4, the impacts on total economic benefits will be marginal with a total decline of \$1.4 million for the four years from 2004 to 2007. Access alternative 3 is estimated to produce the largest decline, \$11.9 million for the same period (Table 57). With access alternative 2, total economic benefits will increase marginally by \$2.8 million.

- The long-term economic impacts of access will be positive. Annual average fleet revenues will be positive for all access alternatives relative to no access both for the status quo and no action scenarios. This is because higher landings without access will eventually have negative impacts on scallop biomass and will reduce LPUE and landings in future years. As a result, total economic benefits in the long-term will be positive for all access alternatives with alternative mechanical rotation and for Amendment 10 rotation (Table 59).
- The size of the scallops will be larger with access. Average meat count with access will be around 15 meats per pound during the short-term (2004-2007), whereas, it will be 17.6 meats per pound without access to the Georges Bank groundfish areas (Table 61). Because more U10s will be landed with access, total revenues and economic benefits could be higher than estimated here if the price premium on U10s prevails in the future.
- The economic benefits for access were estimated assuming that the landings from the Georges Bank access areas will reach the scallop TACs for these areas and that there will be no premature closure due to the landings of finfish in excess of the TACs set for these species. The revenues and economic benefits could be lower, however, than estimated here if finfish TACs are met before the scallop TACs are reached.
- Access may reduce the total crew DAS worked and employment in the scallop fishery. The incomes of the crew who continue to be employed are estimated to increase because of access to the highly productive areas of the Georges Bank groundfish areas (Table 67 and Table 68).

Table 57. Short-term (2004-2007) economic impacts net of no action – no access. (Dollar values are expressed in 1996 constant prices.)

Access alternatives	Average revenue per year net of No Action (\$ million)		Total cumulative benefits net of No Action (\$ million)	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	-0.72	-0.06	-16.28	-1.42
Alternative 2	-0.56	0.14	-12.61	2.86
Alternative 3	-1.10	-0.71	-25.35	-11.93
Alternative 4	-0.63	-0.06	-13.80	-1.42

Table 58. Short-term (2004-2007) economic impacts net of no action – no access on producer and consumer benefits. (Dollar values are expressed in 1996 constant prices.)

Access alternatives	Cumulative producer surplus net of No Action (\$ million)		Cumulative consumer surplus Net of No Action (\$ million)	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	31.22	31.19	-47.50	-32.61
Alternative 2	31.34	31.37	-43.95	-28.51
Alternative 3	31.04	30.20	-56.39	-42.13
Alternative 4	31.24	31.19	-45.04	-32.61

Table 59. Long-term (2008-2013) economic impacts on revenue and total economic benefits net of no action – no access. (Dollar values are expressed in 1996 constant prices.)

Access alternatives	Average revenue per year net of No Action (\$ million)		Total cumulative benefits Net of No Action (\$ million)	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	2.80	3.10	52.50	47.18
Alternative 2	2.87	3.22	55.60	50.09
Alternative 3	2.57	2.63	42.24	36.17
Alternative 4	2.83	3.10	54.93	47.18

Table 60. Long-term (2008-2013) impacts on producer and consumer surplus net of no action – no access. (Dollar values are expressed in 1996 constant prices.)

Access alternatives	Cumulative producer surplus net of No Action (\$ million)		Cumulative consumer surplus Net of No Action (\$ million)	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	37.37	38.88	15.13	8.29
Alternative 2	37.23	38.96	18.36	11.13
Alternative 3	38.08	38.52	4.16	-2.36
Alternative 4	37.19	38.88	17.74	8.29

Table 61. LPUE, DAS and meat count with and without access.

	LPUE	DAS	Meat count
2004-2007			
A10 rotation with access	2,486	22,069	15.01
Alternative rotation with access	2,490	22,747	15.02
Status quo (No access and 24000 DAS)	2,188	24,114	16.81
No Action (No access)	1,966	30,268	17.60
2008-2013			
A10 rotation with access	2,673	21,176	13.23
Alternative rotation with access	2,670	21,172	13.25
Status quo (No access and 24000 DAS)	2,327	23,957	15.34
No Action (No access)	1,808	27,724	18.38

6.1.4.2 Discussion of Results

This section provides further discussion of the economic results, which were summarized above, and shows the estimated (absolute) values of the revenues, producer and consumer surplus, and total economic benefits for two scenarios with access and no access. These impacts are shown in Table 62 and Table 63 for A10 rotation with access alternative 1 and for alternative mechanical rotation with preferred access alternative 4. These two access options are selected here for purposes of brevity since the economic impacts of the four access options are analyzed in detail for each rotation alternative in Sections 6.2.2.4 and 6.2.11.4. The numerical results are similar, except that access alternative 3 generates relatively smaller economic benefits.

Despite lower average landings per year with access during the 2004-2007 period, average fleet revenues per year is not expected to change considerably with or without access (except for the status quo scenario) because the prices will be slightly higher with access (Table 62). Status quo scenario results in lower landings and revenues because of lower DAS allocations (24,114 fleet DAS) compared to no action (30,268 fleet DAS).

The change in scallop fleet revenues and total economic benefits does not provide a full explanation of the economic impacts on producer and consumers, however. This is because the management actions affect the producer benefits not only through their impacts on revenues, but also by their impacts on the fishing effort and costs. The economic results show that, even during the short-term, access will have positive impacts on producer benefits because it will result in lower operational costs. Because the productivity, i.e., LPUE, will be lower in the open areas compared to the access areas, the vessels will need to spend more time to fish to same amount of scallops in the open areas (Table 61). As a result, their operational costs without access (no action) will be higher as compared to access options, and the producer surplus, as measured by total fleet revenues net of operational costs, will be greater with access than without access. During the 2004-2007 period, the cumulative discounted value of producer surplus for both rotation alternatives (i.e., A10 and mechanical rotation alternative) will exceed the no action levels by more than \$30 million.

Because consumers gain from lower prices and higher landings, the change in consumer surplus could be positive under certain circumstances even though producer benefits are negative, and vice versa. In this case, consumer surplus without access (no action) will exceed access with A10 rotation by \$47 million, and access with alternative rotation by \$32 million due to the larger landings and relatively lower

prices for the no access scenario. Because of this, the mechanical rotation alternatives with access will result in lower total benefits during the first four years of the program (2004 to 2007) compared to no action (Table 57). The alternative mechanical rotation alternative with access (alternative 4) would result in a marginal decrease in cumulative value of net benefits by about \$1.42 million during the 2004-2007. The total benefits for Amendment 10 rotation with access will be \$15.70 million less compared to no action, no access alternative. In short, in the short-term, the scallop fishing industry will benefit from access to the Georges Bank groundfish areas due to the lower costs of fishing in those more productive areas, whereas the impacts on consumers will be negative because of the lower landings and higher prices with access.

Table 62. Economic impacts of access to groundfish areas (Dollar values are expressed in 1996 constant prices.) 2004-2007.

Period/Alternatives	Annual Averages				Cumulative discounted values		
	Landings Million Lb.	Ex-vessel price \$/lb	Fleet Revenues Million \$	Operating costs Million \$	Producer Surplus Million \$	Consumer Surplus Million \$	Total Benefits Million \$
2004-2007							
A10 rotation with access*	54.74	3.12	170.45	23.55	497.18	371.04	868.22
Alternative rotation with access**	56.26	3.05	171.11	24.38	496.58	385.93	882.51
Status quo (No access and 24000 DAS)	52.71	3.21	168.27	25.99	481.23	346.84	828.08
No Action (No access)	59.17	2.92	171.17	33.76	465.39	418.54	883.93
Change from no action, no access							
A10 rotation with access*	-4.43	0.20	-0.72	-10.21	31.79	-47.50	-15.71
Alternative rotation with access**	-2.91	0.13	-0.06	-9.38	31.19	-32.61	-1.42
Status quo (No access and 24000 DAS)	-6.46	0.29	-2.90	-7.77	15.84	-71.70	-55.85
Change from status quo							
A10 rotation with access*	2.03	-0.09	2.18	-2.44	15.95	24.20	40.14
Alternative rotation with access	3.55	-0.16	2.84	-1.61	15.35	39.09	54.43
No action (no access)	6.46	-0.29	2.90	7.77	-15.84	71.70	55.85

*With boundary alternative 1.

** With boundary alternative 4.

The long-term economic effects of the access options will be positive, however, because of the decline in LPUEs in the open areas without access. Table 61 shows that although with access average LPUE per year is estimated to increase to over 2,600 lbs., without access it will decline to 1,800 lb. during the 2008-2013 period. Furthermore, total fishing effort will be higher with no access (about 27,000 DAS) even though total landings will be less compared to access. As a result, total economic benefits with the alternative mechanical rotation and with access to the Georges Bank groundfish areas (alternative 4) will exceed no action benefits during the 2008-2013 period. This is because lower LPUEs, higher effort and operational costs with no access will reduce the producer surplus by about \$38 million compared to access options (Table 60 and Table 63). Therefore, total benefits from access will be positive in the long-term (2008-2013) and exceed the no access benefits by \$53 million (A10 rotation) to \$47 million (Alternative rotation), despite the decline in the consumer surplus during the same period.

Table 63. Long-term economic impacts of access to groundfish areas (Dollar values are expressed in 1996 constant prices.) 2008-2013.

Period/Alternatives	Annual Averages				Cumulative discounted values		
	Landings Million lb.	Ex- vessel price \$/lb	Fleet Revenues Million \$	Operating costs Million \$	Producer Surplus Million \$	Consumer Surplus Million \$	Total Benefits Million \$
2008-2013							
A10 rotation with access*	56.69	3.05	171.47	22.49	542.23	426.60	968.83
Alternative rotation with access**	56.32	3.06	171.76	22.55	543.16	419.77	962.92
Status quo (No access and 24000 DAS)	55.72	3.08	170.58	25.80	527.72	416.78	944.50
No Action (No access)	54.83	3.11	168.67	30.57	504.27	411.47	915.75
Change from no action, no access							
A10 rotation with access*	1.86	-0.06	2.80	-8.08	37.96	15.13	53.08
Alternative rotation with access**	1.49	-0.06	3.10	-8.02	38.88	8.29	47.18
Status quo (No access and 24000 DAS)	0.89	-0.03	1.91	-4.77	23.45	5.31	28.75
Change from status quo							
A10 rotation with access*	0.97	-0.03	0.89	-3.31	14.51	9.82	24.33
Alternative rotation with access	0.60	-0.02	1.18	-3.25	15.44	2.99	18.42
No action (no access)	-0.89	0.03	-1.91	4.77	-23.45	-5.31	-28.75

* With boundary alternative 1.

** With boundary alternative 4.

Table 64. The impacts of access on annual average scallop fleet revenue

Access alternatives	Average annual percent change from No Action during 2004-2007		Average annual percent change from No Action during 2008-2013	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	-0.42%	-0.03%	1.63%	1.81%
Alternative 2	-0.33%	0.08%	1.68%	1.88%
Alternative 3	-0.64%	-0.42%	1.50%	1.54%
Alternative 4	-0.37%	-0.03%	1.66%	1.81%

Table 65. The impacts of access on total scallop fleet operational costs

Access alternatives	Average annual percent change from No Action during 2004-2007		Average annual percent change from No Action during 2008-2013	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	-29.75%	-27.79%	-32.90%	-33.22%
Alternative 2	-29.39%	-27.35%	-32.60%	-32.93%
Alternative 3	-30.72%	-28.86%	-34.08%	-34.26%
Alternative 4	-29.51%	-27.79%	-32.66%	-33.22%

Table 66. The impacts of access on total scallop fleet gross profits

Access alternatives	Average annual percent change from No Action during 2004-2007		Average annual percent change from No Action during 2008-2013	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	17.90%	18.09%	21.80%	22.63%
Alternative 2	17.99%	18.23%	21.77%	22.71%
Alternative 3	17.74%	17.40%	22.05%	22.30%
Alternative 4	17.92%	18.09%	21.73%	22.63%

6.1.4.3 Impacts of access on employment and crew incomes

Because the DAS allocations per vessel will be higher without access to the Georges Bank groundfish areas compared to access, employment as measured by total crew-days (Crew*DAS) will be higher without access. Conversely, total crew-days are estimated to decline by 23% to 28% from no action-no access levels depending on the rotation and the access boundary alternative (Table 67). This reduction in crew-days does not necessarily translate into a reduction in the number of crew employed in scallop fishery. If, however, lower DAS allocations make some crew available for fishing on different vessels part of the year, there could be some decline in the total number of crew employed, although the extent of this decline could not be estimated.

On the income side the impacts from access will be positive. Access to the Georges Bank groundfish areas will benefit the crewmembers that are employed in the scallop fishery. Because crew income is based on a lay system, which is assumed to be 60/40 in this analysis, crew pays for the trip expenses. Due to the higher scallop abundance and productivity of the access areas, the trip costs will be lower with access per pound of scallops landed. Therefore, crew expenses will be less and income will be higher with access even though revenues may not change significantly, or even decline slightly. As Table 68 shows, crew income is estimated to increase by more than 7% during the 2004-2007 period with access, and more than 8% in the long-term if the same access policies are kept in place.

Table 67. The impacts of access on employment as measured by changes in total crew DAS.

Access alternatives	Average annual percent change from No Action during 2004-2007		Average annual percent change from No Action during 2008-2013	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	-27.09%	-25.26%	-23.62%	-23.93%
Alternative 2	-26.76%	-24.85%	-23.31%	-23.64%
Alternative 3	-27.99%	-26.26%	-24.82%	-24.99%
Alternative 4	-26.87%	-25.26%	-23.38%	-23.93%

Table 68. The impacts of access on total crew income (for the scallop fleet as a whole).

Access alternatives	Average annual percent change from No Action during 2004-2007		Average annual percent change from No Action during 2008-2013	
	A10 Rotation	Alternative Rotation	A10 Rotation	Alternative Rotation
Alternative 1	7.62%	7.57%	8.80%	9.11%
Alternative 2	7.64%	7.60%	8.76%	9.12%
Alternative 3	7.60%	7.37%	8.96%	9.06%
Alternative 4	7.62%	7.57%	8.76%	9.11%

6.1.4.4 Sources of Uncertainty

The economic impacts of the proposed access to the Georges Bank groundfish areas and other measures proposed by this Framework were analyzed using the bio-economic model described in Appendix IV of Amendment 10 FSEIS. The estimated results are based on the available information of yield streams from the biological simulations and data on vessel costs, crew shares, prices, and revenues of the scallop vessels. Therefore, the numerical results of this analysis should be interpreted with caution due to uncertainties about the likely changes in:

- Factors affecting scallop resource abundance and landings
- Fishing behavior
- Fixed costs
- Variable costs including the price of fuel
- Import prices
- Bycatch and revenues from other fisheries
- The share system
- The number of active vessels
- Structural changes in ownership
- The composition of fleet in terms of tonnage, horse power and crew size of the active vessels
- Disposable income and preferences of consumers for scallops
- Price differences and premium on small versus large scallops
- Enforcement costs

In addition, the uncertainties and sensitivity of the economic results to various parameters and biological inputs, to values of the discount rate, and to the future values of the economic variables were discussed in Appendix IV of Amendment 10 FSEIS. These sensitivity analyses and uncertainties are also applicable for the results of the economic analyses provided in Framework 16.

6.1.5 Summary of Aggregated Social Impacts

The social impacts from Framework 16/39 will be positive overall for the scallop industry, in that gaining access to groundfish closed areas (under conditions that follow newly detailed biomass changes as well as changes in the groundfish plan) will enhance revenues to the industry overall, secure access to a reliable source of scallop biomass (with positive ramifications for working conditions and income), and positively enhance perceptions of the viability of inter-fishery agreements. Conversely, the suite of preferred alternatives has the potential for some negative impacts as well, namely from the institutional parameters devised that encourage a derby fishing among certain sectors (e.g. general category vessels) and under certain conditions (e.g. fear of hard TAC for yellowtail flounder), with the accompanying social impacts such as safety risks and negative working conditions.

6.1.5.1 Public health and safety

Effects on public health and safety from rotation area management and other scallop regulations were analyzed in Section 6.1.10 of Amendment 10. These effects are also monitored in the Council's Scallop SAFE Reports (NEFMC 1999 and NEFMC 2000), including a detailed analysis of casualty statistics in the 2000 SAFE Report. In general, the scallop fishery has fewer mishaps than in most other fisheries, but the ones that occur are usually more serious in nature (R. Higgins, USCG, pers. comm.), possibly due to the rugged conditions and heavy gear in use.

Area rotation management, including controlled access trips that have a constant DAS charge, introduces some unique management measures that may impact the health and safety of fishermen on scallop vessels. First, scallop fishing gear must be stowed so that it is not ready for fishing when a vessel transits a closed rotation area, or an access area when the vessel is not on a controlled access DAS. This is a common requirement that exists in many other plans that use closed areas. The stowage requirements have been set at a minimum level to minimize the effects on crew safety, but can be quite dangerous in heavy weather. These dangers however are no worse than the act of fishing under similar conditions.

Second, vessels on a controlled access trip have in the past made decisions to continue fishing or stay in an access area to avoid busing the DAS charge when the vessel's catch was much lower than the scallop possession limit. Before Amendment 10, the customary policy was that applications for controlled access trips that landed no scallops would be favorably considered for a rebate of associated DAS charges. Amendment 10 will change that policy so that any vessel would receive a partial rebate of days for trips that returned to port early, even though the trip landed a significant fraction of the scallop possession limit. This new policy, if Amendment 10 is approved, is expected to have a beneficial effect on the crew's health and safety because captains have less business risk when returning to port due to weather or other concerns that relate to safety. Nothing in the proposed framework action is expected to change this beneficial measure.

The public raised concerns about health and safety of the crew resulting from a restricted season meant to avoid higher groundfish bycatch, arguing that it should be one factor that weighs in favor of a year around season. Hurricanes and nor'easters are infrequent, but not uncommon meteorological events in the Georges Bank region, where the proposed access program would occur. Hurricane occurrences can occur as early as July and as late as October, but are most common during September and early October. Nor'easters generally occur from late September to March, but are most common in October to December. None of these events prevent vessels from fishing during these months, but fishermen must be aware of their pending presence and may need to find shelter or fish at another time.

The proposed access season is June 15 to January 31 (7½ months), but due to delayed implementation will probably be early September 2004 to January 31, 2005 (4 to 5 months) during this fishing year. Another factor is that the yellowtail flounder catches could reach the TACs before January 31, closing the access program early. The Council seriously weighed this factor against alternatives for a longer season, and chose these dates because of the opportunity for vessels to take the allocated trips is sufficient and the new broken trip adjustment procedure will give fishermen an easier choice to seek shelter in port. This choice under the new procedure is only slightly more costly than if the vessel had made the same decision to fish in open areas, where scallop vessels operate year around. At most, the proposed action would allocate 3 trips for limited access vessels to fish in the access areas, and each trip is expected to take about 7 to 8 days. Therefore the total of 21 – 24 days is a small fraction of the time that the areas are expected to be open for fishing and vessels would not be forced to fish, compromising health and safety.

There are also no general public health and safety effects caused by the proposed action. The landed scallop meats are free from PSP toxins and bioaccumulation of other toxins or heavy metals is not known to be a problem.

6.1.5.2 Scientific, historic or cultural resources and ecologically critical areas

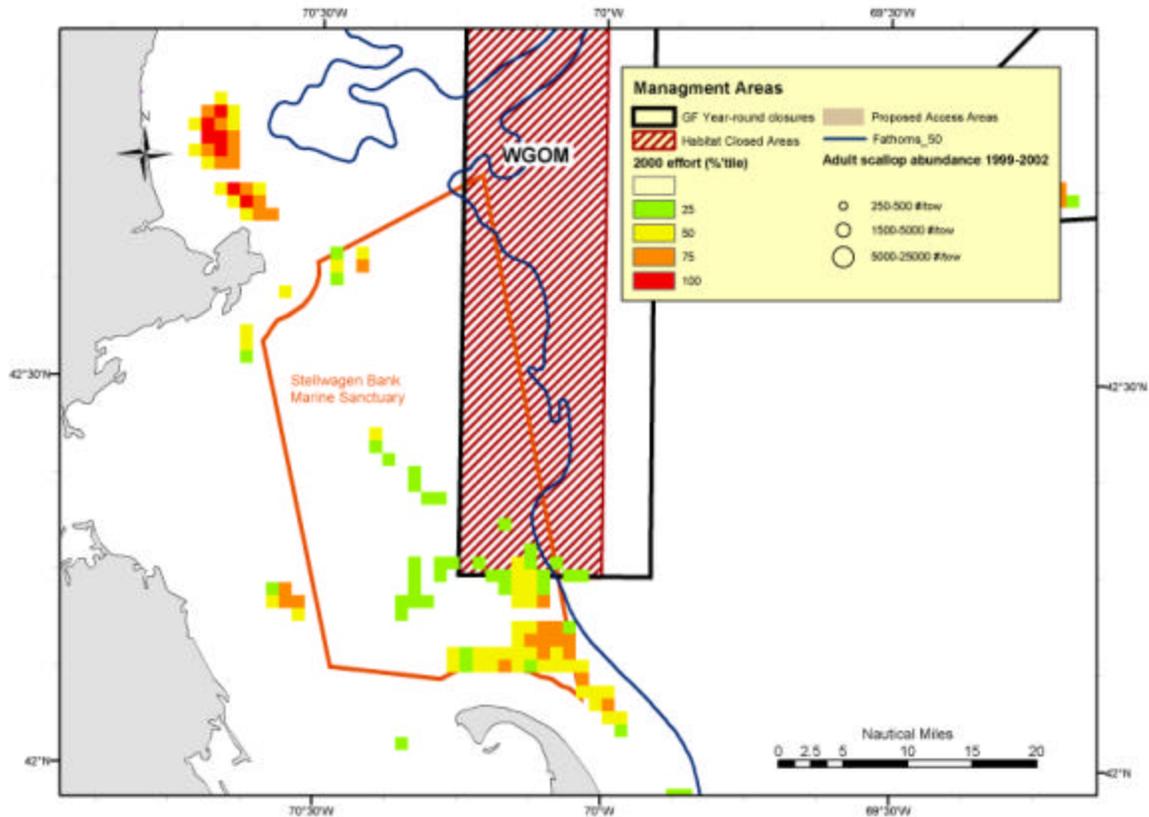
There are two areas with significant scientific, historic, or cultural resources or are considered as ecologically critical areas, overlapping the distribution of the scallop resource and fishing effort. One is the Stellwagen Bank National Marine Sanctuary (SBNMS), designated as a marine sanctuary in November 1992, and the second is the Habitat Area of Particular Concern for Cod, established by the New England Fisheries Management Council in its Multispecies FMP in 1999.

The SBNMS encompasses a 15-fathom bank that rises offshore of Massachusetts Bay, between Cape Cod and Cape Ann, MA (Map 9). A description of the physical environment, the biological environment, and the archeological and cultural resources within the sanctuary are described at <http://www.sanctuaries.nos.noaa.gov/oms/omsstellwagen/omsstellwagennatset.html#Arch>.

Scallop fishing vessels have periodically targeted scallops in this area during limited access DAS trips and under general category rules (for vessels using dredges while not on a scallop DAS). Limited access vessels are required to use VMS, which allows characterization of fishing effort by location, but target scallops periodically either on a scallop DAS or under general category rules. The distribution of this fishing activity in 2000 is shown in the map below. Vessels with general category permits that operate from Chatham, Provincetown, Green Harbor, and Gloucester, MA also fish more regularly in this area, during seasons when the vessels are not pursuing other species, such as groundfish.

The distribution of the VMS fishing effort data in the sanctuary is fairly representative of all scallop fishing effort, and occurs primarily in the SE part of the sanctuary, just outside of the three mile limit, near Cape Cod, MA. Less intense scallop fishing occurs to the NW of this area, toward the center of the sanctuary.

Access to the proposed access areas is not expected to cause limited access scallop fishing effort in the sanctuary to increase, and it may in fact decrease because of a greater degree of access to areas in the region with high scallop biomass. Similarly, vessels that fish for scallops in the sanctuary may fish there less if they are able to take trips in the proposed access areas, which may reduce the amount of scallop fishing within the sanctuary. On the other hand, if the proposed access program encourages more investment in scallop fishing gear by vessels that can obtain an open-access general category scallop permit, then the areas identified in the map below could see higher scallop fishing effort when the proposed access areas are no longer open for scallop fishing. No significant impacts on scientific, historic, or cultural resources within the sanctuary are known, however.

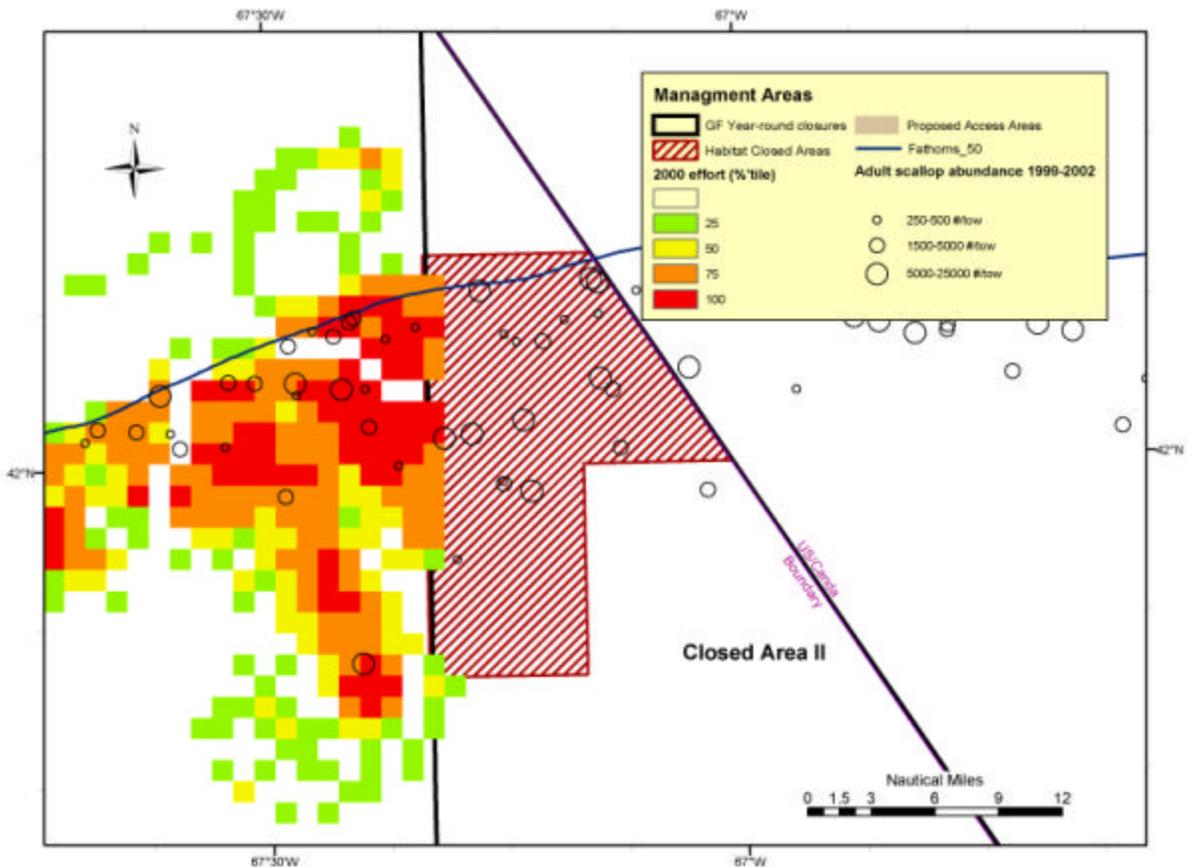


Map 9. Distribution of total fishing effort from VMS data during the 2000 fishing year in and around the Stellwagen Bank National Marine Sanctuary.

The Cod Habitat Area of Particular Concern (HAPC) is located on the northern edge of Georges Bank, along the US/CA boundary (Map 10). This area was designated as an HAPC due to its ecological significance to cod and other groundfish species. Its physical and biological environment are described in Amendment 11 to the Multispecies FMP. Since this area is in Closed Area II, in an area that the Council has not allowed access, no scallop fishing occurs there although there are important scallop resources found within it.

Scallop fishing is prohibited in the HAPC because scallop dredges are capable of catching groundfish and because it has been determined that scallop dredges have a substantial adverse impact on the types of habitat found within the HAPC, areas having cobble and boulder substrates with emergent epifauna. Heavy scallop fishing occurs immediately to the west of the HAPC, in sloughs that run NW to SE. Scallop fishing occurs near the border of the HAPC, not due to any export of scallops from the HAPC to open fishing areas, but because these are naturally-occurring beds that are very favorable for scallop productivity.

Since no scallop fishing occurs within the HAPC, there are no impacts from scallop management in this ecologically critical area. The proposed action furthermore does not allow access to this area, but similar areas to the west of the HAPC may see a reduction of scallop fishing effort as a result of access and lower open area DAS allocations.



Map 10. Location of the Cod HAPC within Closed Area II, along the northern edge of Georges Bank and bordering the US/CA line. Pixels that show the intensity of scallop fishing effort in the 2000 fishing year overlap the HAPC due to 1 nm² grid size, plotted on the center of the data point.

6.2 Analysis of Direct and Indirect Impacts of Alternatives Under Consideration

6.2.1 No access for Scallop Fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area (No Action; Section 4.2.1)

The No Action alternative (Section 4.2.1) would allow no scallop fishing in any part of the groundfish closed areas until the groundfish stocks were rebuilt sufficiently to allow fishing in the groundfish mortality closures areas that do not overlap EFH closures (see Section 4.2 for further description). This is not likely to occur in the foreseeable future, unless through a special access program (SAP) provision in the Multispecies FMP.

Under this alternative, the DAS allocations would be set to achieve a 0.2 fishing mortality target, regardless of the amount of scallops that are available to the fishery. Amendment 10 allocates open area DAS to achieve this goal, with 62 full-time DAS in 2004, 117 full-time DAS in 2005, and 152 full-time DAS in 2006 and thereafter, unless these annual allocations are adjusted by framework action.

6.2.1.1 Biological Impacts

The regulations under Amendment 10 would allocate more DAS for vessels to fish in open fishing areas if there is no access to the Georges Bank groundfish closed areas. By default, the increase of the DAS allocations occurs on August 15, 2004 if access to the groundfish closed areas has not been approved. In 2004, the full-time open area DAS allocations would increase from 42 DAS to 62 DAS.

Analysis of the effects of no action were analyzed in the Amendment 10 FSEIS. The higher DAS allocations without access to the groundfish closed areas would be needed to achieve the annual fishing mortality target. Under Amendment 10's overfishing definition, the annual target is $F=0.20$ applied to the entire resource, regardless of what areas are available for fishing. As such, greater DAS allocations in the open areas are needed when more areas are not available for fishing, and vice versa.

Technically, this approach only removes 17% of the exploitable biomass from the population each year and ensures that spawning stock biomass remains near acceptable levels (unless there is an extended recruitment failure due to environmental effects). When large areas remain closed, a substantial portion of the spawning biomass would be in areas that are closed to scallop fishing (assuming the closures overlap the scallop distribution).

On the other hand, the additional fishing effort in open areas reduces the exploitable biomass and yield-per-recruit if the open area fishing mortality exceeds F_{max} . Since the Scallop FMP annual fishing mortality is intended to be 80% of F_{max} , then increasing the open area DAS allocations by more than 20% would be expected to cause exploitable biomass and yield-per-recruit to decline. A biomass decline would cause catch per DAS to decline, increasing fishing costs and require even higher DAS allocations to catch 17% of the exploitable biomass from less than 100% of the resource. This is why the Amendment 10 full-time DAS allocations without access increase from 62 in 2004, to 117 in 2005, and 152 in 2006 as the percent of total scallop biomass available to the fishery declines without access.

The effects of higher open area DAS allocations without access are not very bad in the short-term, because the scallop resource has experienced 4-5 years of above average recruitment. Over the longer term, however, the scallop yield-per-recruit and catch per DAS was predicted to decline, causing the Council to be concerned about the approach being taken in Amendment 10. To address this long-term problem, Amendment 10 includes a provision in the framework adjustment process to force re-consideration of DAS allocations if they are not able to produce optimum yield.

If recruitment remains above average, then future DAS allocations may not need to be reduced as much as the Amendment 10 analyses indicate they would need to be to maximize yield from scallops available to the fishery. (In addition, it was uncertain what effects the developing habitat closure alternatives and this framework would have).

Well, good recruitment is exactly what happened. Since the Amendment 10 analysis was completed, the 2003 surveys indicate that recruitment in the Mid-Atlantic was again above average – in fact the highest on record. Whereas the Amendment 10 analysis indicated that the annual landings from open areas during 2004-2007 would average 37 million lbs. meat weight, the updated analysis (see Section 6.2.11.1.1 and 6.2.11.4) indicates that the open area landings during 2004-2007 could average 60 million lbs. meat weight! Also, the higher DAS allocations without access could be sustainable longer than previously estimated.

Counterintuitively, the updated projections using the 2003 abundance estimates suggest that the open area DAS allocations without access to the Georges Bank closed areas would need to come down

slightly to achieve the annual $F=0.20$ mortality target. This happens because a greater fraction of the total biomass would be in open fishing areas than previously thought, raising landings, and raising it in proportion to the total scallop biomass in all areas.

Even under No Action, projected total biomass increases through 2007, before declining in response to the higher fishing mortality in open areas. So the exceptional recruitment in the Mid-Atlantic may relieve the effects of the 'no access' DAS allocations in the short-term in Amendment 10, and postpone the need to address this issue in future framework adjustments.

On the other hand, the exceptional recruitment in the Mid-Atlantic region was measured by two nearly-simultaneous surveys, one conducted by NMFS using dredge gear on the R/V Albatross and the other conducted by SMAST using video surveys on commercial vessels. Both indicated substantial amounts of recruits. Exactly how big the year class is and how much it will contribute to future biomass remains to be seen. It will be two to three years before the smallest scallops that were observed in the 2003 surveys become commercial size, taking a bit longer than that to maximize yield-per-recruit. As we have seen for the 2000 year class in Closed Area II (at the time, these recruits were also a survey time series record), the size of the population may differ from that measured by a single year's survey and conditions may change, affecting the growth and mortality of scallops before reaching commercial size. Reliance on the future biomass of a year class when first observed by surveys is not good management practice, but continued monitoring is needed to account for the effects of this year class in future framework adjustments.

6.2.1.2 Habitat Impacts

The habitat impacts of the No Action alternative under Amendment 10 were analyzed in the Amendment 10 FSEIS. In general, the No Action alternative prohibits access into closed areas, thus increases effort in outside areas to achieve the annual fishing mortality rate. More effort in open areas will increase bottom contact time, which could have negative or neutral impacts on EFH depending on where effort occurs.

If outside effort increases in areas like the Great South Channel, it would have negative impacts on the complex bottoms that are in this area. On the other hand, if effort shifts to the primarily sandy bottom in the Mid-Atlantic region, then impacts on habitat may not be as great because the substrate in these areas is less sensitive to alteration by bottom tending gears. Conservation of EFH in the closed areas will be enhanced without access, but those benefits would be offset by higher bottom contact time elsewhere. Under the No Action alternative effort allocations are expected to increase, full-time DAS allocations would increase to 117 days in 2005 from 62 DAS in 2004, increasing again to 152 DAS in 2006. Increasing effort in areas with higher scallop biomass reduces bottom contact time, thus reducing negative impacts on EFH.

6.2.1.3 Impacts of Management Measures on Endangered and Other Protected Species

The No Action alternative represents a closure of Areas I and II and the Nantucket Lightship Area for the foreseeable future without scallop vessel access. Generally closures represent a positive impact to protected species if they reduce the risk of interactions with gear types in which takes are known to have occurred. This also will be the case for sea turtles found within the boundaries of the closed areas. It is important to note, however, that without access DAS allocations will increase in the open areas, resulting in a possible shift of scallop effort to the Mid-Atlantic where sea turtles are much more abundant than in

the cooler waters off the New England coast. Accordingly, an effort shift southward could result in increased interactions between sea turtles and scallop gear.

6.2.1.4 Economic Impacts

No action is defined as no access and scallop fishing in any part of the Closed Area I (CAI), Closed Area II (CAII), or the Nantucket Lightship Area (NLSA), for the foreseeable future. The impacts of the no access, no action alternative were examined above in Section 6.1.4, and in Table 57 to Table 63 in comparison to the access options. The results could be summarized as follows:

- Except in 2004, the landings with no access, no action scenario will exceed landings with rotation and access alternatives during the 2005-2007 period. The updated biological projections show that average annual scallop landings without access to the Georges Bank groundfish areas will be about 60 million lb. per year during 2004-2007, but will range from 54.7 million lb. (A10 rotation schedule) to 56.6 million lb. (Framework 16 rotation schedule) with access. This is partly due to the large year class in the Mid-Atlantic areas and the decline in biomass in the southern portion of the Closed Area II. Scallop landings will be higher with no access also because of the higher DAS allocations under no access compared to the access options.
- As a result of higher landings with no action, average fleet revenues per year will be slightly higher than the estimated revenues with access during 2004-2007.
- Under the no access, no action alternative the vessels will fish only in the open areas, which are relatively less productive compared to the access areas as reflected in lower over LPUEs (Table 56). As a result, more DAS will be allocated to the vessels to land the same amount of scallops compared to the access options. Total annual fleet DAS is estimated to be 30,778 days-at-sea with no action, which would exceed the DAS for the access options by at least 6,000 DAS on the average during 2004-2007. Because of this, the operating expenses will be higher for the no action scenario, resulting in lower net revenues (gross revenues minus operational expenses) compared to the access options. As a result, cumulative value of the producer surplus with no action will be about \$31 million less compared to the levels estimated for access during 2004-2007 (Table 58). Similarly, gross profits of the scallop fleet will be smaller for the no action scenario compared to the levels with access.
- Because scallop landings will be higher and prices will be slightly lower with no action, the consumer benefits (i.e., consumer surplus) would be greater, exceeding the consumer benefits for access by \$39 million to \$58 million during 2004-2007 (Table 58).
- As shown in Table 57 to Table 63, no access, no action will also result in higher net economic benefits, as measured by the sum of consumer and producer benefits (i.e., surplus), compared to access options by \$1.4 million to \$25.3 million during 2004-2007, except for Framework 16 rotation combined with non-selected access alternative 2.
- The long-term economic impacts of no action (no access) will be negative. Annual average fleet revenues will be less, and operating expenses will be more with no action relative to the proposed access alternatives. This is because higher landings without access will eventually have negative impacts on scallop biomass and will reduce future landings and LPUE. As a result, in the long-term, no action (no access) will reduce economic benefits by \$36 million to \$55 million compared to rotation with access to Georges Bank groundfish areas (for 2008-2013).

6.2.1.5 Social Impacts

The social impacts from 'No Action,' i.e. no access to the Georges Bank closed areas, would be negative overall for the scallop fleet. Although No Action would generate higher average landings during 2004 to 2007 compared to the preferred alternative (Section 4.1), it would be less beneficial on net producer benefits due to higher fishing costs. The higher fishing costs of No Action, that is to say, the higher costs from fishing in open areas that lack the concentration of large scallops seen in the closed areas, would also have concurrent negative social impacts. Access to the concentrated scallop beds in the closed areas implies a fishing trip with less income risk, and less expenditure on petrol and other costs borne usually by the crew. It is a further reduction in options available to the fleet. No Action also foregoes the indirect positive social impacts from the preferred alternative forced DAS trade-off, which effectively reduces total time away at sea (with presumably positive impacts on family and community life). Moreover, if No Action led to additional fishing in open areas from increased open-area DAS and thereby caused long-term biomass to decline, such a decline would have negative future impacts on the scallop industry.

6.2.2 Access Boundaries and Scallop TACs (Section 4.2.1)

There are four alternatives that would allow controlled access for scallop fishing in parts of the Georges Bank groundfish closed areas (Nantucket Lightship Area, Closed Area I, and Closed Area II) by vessels holding limited access and possibly general category permits. These alternatives would define boundaries for access that are consistent with the habitat closures in Amendment 10, Amendment 13, or both under a mechanical rotation plan designed to benefit from the large biomass of scallops that appear in parts of the closed areas, while minimizing bycatch and bycatch mortality of groundfish and other finfish.

- Alternative 1 is described in Section 4.2.2.1
- Alternative 2 is described in Section 4.2.2.2
- Alternative 3 is described in Section 4.2.2.3
- Alternative 4 is described in Section 4.2.2.4

6.2.2.1 Biological Impacts

6.2.2.1.1 Scallops

Besides having an effect on limiting bycatch mortality and adverse effects on sensitive habitat, the access boundaries also dictate the amount of scallops that can be sustainably removed from the population (a total allowable catch, or TAC). Greater removals from the access areas by fishing would eventually result in declining yield per recruit, average size, and number of scallops available to the fishery, unless more areas open for scallop fishing. The table below summarizes the projected TACs for the two mechanical rotation strategies that Framework 16 considers.

Under the original rotation plan that the Council adopted in Amendment 10, Closed Area I and Nantucket Lightship Area open for one of four years, but at a higher fishing mortality rate. The time-average mortality is 0.1, or about $\frac{1}{2} F_{\max}$. Under average recruitment conditions, this rate of harvest would therefore maintain a relatively high scallop biomass. Closed Area II would open for controlled access in three of four years, but with an annual fishing mortality target of 0.2, approximately F_{\max} . The time averaged mortality would therefore be 0.15 and this would also maintain a relatively high scallop biomass level under average recruitment conditions.

Due to changes in scallop resource conditions from the 2002 survey (used for analysis in Amendment 10) and the 2003 surveys, landings and allocations would be smoothed and provide more benefits with an alternative rotation strategy that would allow controlled access with a 0.2 fishing mortality target in two of the three access areas each year. Moreover, due to changes in biomass in Closed Area II that were observed in the 2003 surveys, it makes sense to advance access in Closed Area II and postpone access in Closed Area I. With this three-year rotation schedule, the time average fishing mortality rate is 0.13, or about 67% of F_{max} . Although these fishing mortality targets ‘underharvest’ the scallop resource in the access areas with respect to producing maximum yield, both rotation strategies and associated mortality targets produce close to MSY, while taking a precautionary approach to scallop management, reducing bycatch mortality, and minimizing habitat impacts.

There are, however, significant amounts of scallop biomass in areas that would be classified as a habitat closure, particularly in Closed Area I and Closed Area II. So even though, the scallop biomass would be ‘drawn down’ by the proposed amounts of fishing, there will still be significant areas unfished to provide adequate spawning.

Table 69. Projections of total allowable catch (mt meat weight) for fishing years 2004-2007 at target fishing mortality rates for specific Georges Bank access area boundaries.

Area and mortality target	Amendment 10 rotation (Section 4.2.11.1) Access boundary alternative 1 (Section 4.2.2.1)			Framework 16 rotation (Section 4.2.11.2) Access boundary alternative 2 (Section 4.2.2.2)		
	Closed Area I F = 0.4 (0.1 ave)	Closed Area II F = 0.2 (0.15 ave)	Nantucket Lightship Area F = 0.4 (0.1 ave)	Closed Area I F = 0.2 (0.13 ave)	Closed Area II F = 0.2 (0.13 ave)	Nantucket Lightship Area F = 0.2 (0.13 ave)
2004	2,570	0	5,674	0	4515	3109
2005	0	5,002	0	1922	4141	0
2006	0	4,325	0	1674	0	2738
2007	0	3,647	0	0	3718	2293

Because the SMAST video survey appears to provide more accurate swept area estimates of scallop abundance, the Council’s PDT stratified the 2003 survey data by each area access boundary and estimated a combined, weighted average scallop density (see table below). The ratio of this weighted average was expressed as a ratio of the R/V Albatross survey density and multiplied by the above TACs to more accurately determine a TAC that would meet the fishing mortality targets. Except for the access boundary alternative 1 (FW13) in the Nantucket Lightship Area, the weighted average ranged between 66 and 91% of the R/V Albatross estimate. These combined adjustment factors was applied to the swept area biomass estimate from the 2003 R/V Albatross survey, projected forward to 2004 to account for growth and natural mortality.

These adjusted TACs would be used to set sustainable limits on the catch from each area, as shown in Table 23, Table 25, Table 27, and Table 29 in Section 4.2.2. The TACs were divided up into 18,000 lb. trips and distributed among the expected number of active limited access scallop vessels, approximating DAS allocation ratios in the open areas for full-time, part-time, and occasional vessels.

Table 70. Variance-weighted adjustment factors applied projections based on R/V Albatross data (Source, Northeast Fisheries Science Center, Woods Hole, MA), incorporating the scallop density estimates ($\#/m^2$) from the 2003 SMAST surveys (Source: Dr. Kevin Stokesbury, SMAST, U. Mass., New Bedford, MA) in the proposed access areas.

Closed area	Access alternative	SMAST video survey			NMFS dredge survey			Weighted Average	Variance weighted adjustment to NMFS biomass estimate
		Density per square meter	CV%	Total estimated number in management area (millions)	Density per square meter	CV%	Total, efficiency adjusted number in management area (millions)		
NLSA	FW13	0.601	19.54	556.17	0.570	22.80	480.94	0.590	108.42%
NLSA	Alt 10b	0.338	21.28	595.12	0.570	27.00	715.55	0.440	90.59%
CAI	FW13	0.170	28.01	209.91	0.260	29.40	314.80	0.214	82.94%
CAI	Alt 10b	0.157	25.99	218.66	0.330	29.70	390.49	0.241	76.53%
CAI	Sliver	0.142	27.14	91.84	0.300	51.20	194.48	0.194	65.51%
CAII	FW13	0.230	17.44	802.72	0.290	27.60	1,078.22	0.254	84.34%
CAII	Alt 10b	0.156	17.72	815.79	0.190	27.80	1,101.99	0.171	84.14%

6.2.2.1.1.1 Trip and DAS allocations

Since the scallop TACs vary by access boundary alternative, it affects the number of controlled access trips and DAS that may be allocated without unacceptable risk of meeting the TACs and closing access early when vessels use the allocated trips in the controlled access areas. The differences between access alternatives 1, 2, and 4 are however minor (see tables below). The largest effect on scallop mortality and yield from controlled access is for access alternative 3 for rotation alternatives and years that require access to Closed Area I.

For purposes of comparison, the allocations and projected trip characteristics (LPUE, days used, percent of TAC landed if all trips are taken, etc.) are summarized in the tables below. Only the Framework 16 mechanical rotation strategy (Section 4.2.11.2) is listed in the following tables, because a comparison of the allocations for the two rotation alternatives is described in Section 6.2.11.1 using area access alternative 4.

All four access boundary alternatives would allow an allocation of three full-time controlled access trips in 2004 (Table 71), and if all trips are taken by vessels with active permits, the landings would total 97-98 percent of the combined TACs. In 2005, however, the lower TAC for Closed Area I reduces the number of trips. In addition to the three Hudson Canyon Area trips, area access using boundary alternatives 1, 2, and 4 in 2005 would allow a three trip allocation for Georges Bank area access (Table 72), taking about 95% of the combined TACs if all trips are taken. Access boundary alternative 3, on the other hand, would allow an allocation of only two trips, allowing landings of 81% of the combined TACs.

In 2006 and 2007, the Hudson Canyon Area would open to regular scallop fishing and the projected allocations only include the Georges Bank areas. In 2006, the access boundary alternatives 1 and 3 would reduce the number of full-time controlled access trips down to one trip, instead of two (Table 73). If all trips are taken only 57 and 69% of the combined TACs could be taken with a one-trip allocation. Access boundary alternatives 2 and 4 would allow a two full-time trip allocation in 2006 and if all trips are taken, the landings would total about 104% of the combined TACs. In 2007, all four access alternatives give the same result: an allocation of two full-time trips allowing landings of 78-81 percent of the combined TACs (Table 74).

Table 71. 2004 controlled access allocations by access boundary alternative, assuming Framework 16 mechanical rotation order.

	Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Maximum trips allocated				
Hudson Canyon Area	4	4	4	4
Closed Area I	0	0	0	0
Nantucket Lightship Area	1	1	1	1
Closed Area II	2	2	2	2
Maximum days allocated and charged				
Hudson Canyon Area	48	48	48	48
Closed Area I	0	0	0	0
Nantucket Lightship Area	12	12	12	12
Closed Area II	24	24	24	24
Controlled access days	84	84	84	84
Maximum controlled access trips taken				
Full-time	7	7	7	7
Part-time	2	2	2	2
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area	105.9%	105.9%	105.9%	105.9%
Closed Area I				
Nantucket Lightship Area	70.7%	68.1%	70.7%	68.1%
Closed Area II	124.6%	122.5%	124.6%	124.6%
Combined	98.3%	97.1%	98.3%	97.5%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area	7.5	7.5	7.5	7.5
Closed Area I				
Nantucket Lightship Area	5.7	5.7	5.7	5.7
Closed Area II	6.8	6.8	6.8	6.8
Days charged, but not used (	34.8	34.8	34.8	34.8
Total expected DAS use				
Hudson Canyon Area	8,098	8,098	8,098	8,098
Closed Area I	-	-	-	-
Nantucket Lightship Area	1,529	1,529	1,529	1,529
Closed Area II	3,662	3,662	3,662	3,662
Total DAS used	13,289	13,289	13,289	13,289
Expected total trips	1,891	1,891	1,891	1,891
Hudson Canyon Area	1,081	1,081	1,081	1,081
Closed Area I	-	-	-	-
Nantucket Lightship Area	270	270	270	270
Closed Area II	540	540	540	540

Table 72. 2005 controlled access allocations by access boundary alternative, assuming Framework 16 mechanical rotation order.

	Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Maximum trips allocated				
Hudson Canyon Area	3	3	3	3
Closed Area I	1	1	0	1
Nantucket Lightship Area	0	0	0	0
Closed Area II	1	1	1	1
Maximum days allocated and charged				
Hudson Canyon Area	36	36	36	36
Closed Area I	12	12	0	12
Nantucket Lightship Area	0	0	0	0
Closed Area II	12	12	12	12
Controlled access days	60	60	48	60
Maximum controlled access trips taken				
Full-time	5	5	4	5
Part-time	2	2	1	2
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area	101.5%	101.5%	98.2%	101.5%
Closed Area I	171.1%	162.1%	0.0%	162.1%
Nantucket Lightship Area				
Closed Area II	68.3%	67.1%	68.3%	68.3%
Combined	95.6%	94.5%	81.4%	95.0%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area	7.5	7.5	7.5	7.5
Closed Area I	6.8	6.8		6.8
Nantucket Lightship Area				
Closed Area II	6.5	6.5	6.5	6.5
Days charged, but not used (	24.1	24.1	19.0	24.1
Total expected DAS use				
Hudson Canyon Area	6,146	6,146	6,059	6,146
Closed Area I	1,873	1,873	-	1,873
Nantucket Lightship Area	-	-	-	-
Closed Area II	1,785	1,785	1,759	1,785
Total DAS used	9,803	9,803	7,818	9,803
Expected total trips	1,367	1,367	1,078	1,367
Hudson Canyon Area	820	820	809	820
Closed Area I	273	273	-	273
Nantucket Lightship Area	-	-	-	-
Closed Area II	273	273	270	273

Table 73. 2006 controlled access allocations by access boundary alternative, assuming Framework 16 mechanical rotation order.

	Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Maximum trips allocated				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	1	0	1
Nantucket Lightship Area	1	1	1	1
Closed Area II	0	0	0	0
Maximum days allocated and charged				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	12	0	12
Nantucket Lightship Area	12	12	12	12
Closed Area II	0	0	0	0
Controlled access days	12	24	12	24
Maximum controlled access trips taken				
Full-time	1	2	1	2
Part-time	1	1	1	1
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area				
Closed Area I	0.0%	186.1%	0.0%	186.1%
Nantucket Lightship Area	80.3%	77.3%	80.3%	77.3%
Closed Area II				
Combined	57.0%	103.6%	69.4%	103.6%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area				
Closed Area I		6.8		6.8
Nantucket Lightship Area	5.5	5.5	5.5	5.5
Closed Area II				
Days charged, but not used (	6.5	11.7	6.5	11.7
Total expected DAS use				
Hudson Canyon Area	-	-	-	-
Closed Area I	-	1,888	-	1,888
Nantucket Lightship Area	1,613	1,531	1,613	1,531
Closed Area II	-	-	-	-
Total DAS used	1,613	3,418	1,613	3,418
Expected total trips	292	554	292	554
Hudson Canyon Area	-	-	-	-
Closed Area I	-	277	-	277
Nantucket Lightship Area	292	277	292	277
Closed Area II	-	-	-	-

Table 74. 2007 controlled access allocations by access boundary alternative, assuming Framework 16 mechanical rotation order.

	Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Maximum trips allocated				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	0	0	0
Nantucket Lightship Area	1	1	1	1
Closed Area II	1	1	1	1
Maximum days allocated and charged				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	0	0	0
Nantucket Lightship Area	12	12	12	12
Closed Area II	12	12	12	12
Controlled access days	24	24	24	24
Maximum controlled access trips taken				
Full-time	2	2	2	2
Part-time	1	1	1	1
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area				
Closed Area I				
Nantucket Lightship Area	95.9%	92.3%	95.9%	92.3%
Closed Area II	76.0%	74.7%	76.0%	76.0%
Combined	80.5%	78.4%	80.5%	79.1%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area				
Closed Area I				
Nantucket Lightship Area	5.5	5.5	5.5	5.5
Closed Area II	6.3	6.3	6.3	6.3
Days charged, but not used (	12.1	12.1	12.1	12.1
Total expected DAS use				
Hudson Canyon Area	-	-	-	-
Closed Area I	-	-	-	-
Nantucket Lightship Area	1,536	1,536	1,536	1,536
Closed Area II	1,750	1,750	1,750	1,750
Total DAS used	3,286	3,286	3,286	3,286
Expected total trips	554	554	554	554
Hudson Canyon Area	-	-	-	-
Closed Area I	-	-	-	-
Nantucket Lightship Area	277	277	277	277
Closed Area II	277	277	277	277

6.2.2.1.2 Groundfish

The access boundaries may limit the amount of groundfish bycatch for species whose distributions do not largely overlap the distribution of scallops and the proposed access area boundaries. Because the scallop TACs also limit the amount of fishing, they also help to minimize bycatch mortality for groundfish species. Bycatch estimates, associated with the access boundary TACs, are provided in Section 6.2.5.1.1.

6.2.2.2 Habitat Impacts

The habitat characteristics of the access areas under consideration in this framework action are described in this section. The purpose of this section is to evaluate habitat attributes that could be adversely impacted by a resumption of scallop dredging within the proposed access area. Four different access area alternatives are described using available substrate, EFH and fish community structure information. The access options are displayed in Map 2 through Map 5.

The access alternatives under consideration include four packaged alternatives from eight individual access options. The access area alternatives are described here using six metrics below to summarize their ecological characteristics and to determine the differences between them. These metric analyses have also been completed for the eight individual access options and are summarized in Appendix II. The methods used to assess the habitat impacts of the various access areas are detailed in Appendix I.

6.2.2.2.1 Size

Size of each proposed access alternative

The size of each access area is described in the last column to the right in Table 75. The access alternatives range from 1,654 square nautical miles (Alternative 3) to 3,369 square nautical miles (Alternative 2). Alternatives 1, 3, and 4 are very similar in size and Alternative 2 is significantly larger. Note that the access areas implemented in Framework 13 are the exact same areas as Alternative 1.

	CA I	Nantucket Lightship	CA II	Total Area (nm ²)
Alternative 1	FW13 (357nm ²)	FW13 (330 nm ²)	FW13 (1124 nm ²)	1811 nm²
Alternative 2	A13 (415 nm ²)	A13 Both Areas (1136 nm ²)	A13 (1818 nm ²)	3369 nm²
Alternative 3	A13/FW13 Combo (200 nm ²)	FW13 (330 nm ²)	FW13 (1124 nm ²)	1654 nm²
Alternative 4	A13 (415 nm ²)	A13 East Only (683 nm ²)	FW13 (1124 nm ²)	2222 nm²

Table 75. Area of access alternatives in square nautical miles (nm²)

Another important feature of the proposed access areas, aside from their size, is the degree to which each one of them resembles the three original scallop access areas that were implemented in Framework 13 to the Scallop FMP. Scallop dredging was allowed in these areas for different periods of time during 1999 and 2000, following their initial closure to scallop dredging and bottom trawling in December 1994. Access areas proposed in Alternatives 1 and 3 overlap completely with the FW13 areas, meaning that renewed scallop dredging in these areas in 2004 would resume after a 4 or 5 year closed period. Alternatives 2 and 4, in contrast, would open up some percentage of the existing groundfish

closures where scallop dredging occurred during 1999 and 2000, and some percentage of bottom habitat that has been inaccessible to scallop dredges and bottom trawls since December 1994. As shown in Table 76, the 3,369 nm² in Alternative 2 are almost equally divided between areas that were open under FW13 and areas that were not, whereas 66% of the smaller total area in Alternative 4 was dredged in 1999/2000 and 36% was not.

Alternatives 1 and 3 would maximize the amount of bottom area in the existing groundfish closures that would continue to be protected from the effects of resumed scallop dredging. Of these two, Alternative 3 would limit access to a slightly smaller area in CAI. Alternative 2 would open up 1,715 nm² of bottom area that has not been disturbed by mobile, bottom-tending gear since December 1994. Alternative 4 would open up 568 nm². The differences between Alternatives 2 and 4 are most notable in the NLSP Closed Area and Closed Area II. Alternative 2 would give scallop vessels access to the western and eastern portions of the NLSP Closed Area (instead of just the eastern portion) and all of CAII except the cod HAPC (instead of just the southern portion below 41°30' N).

	Area open for dredging in 1999/2000		Area not open for dredging in 1999/2000	
	Alternative 2	Alternative 4	Alternative 2	Alternative 4
Closed Area				
NLSP	330	330	806	353
CAI	200	200	215	215
CAII	1124	1124	694	0
Total	1654	1654	1715	568
Percent	49%	74%	51%	26%

Table 76. Area (nm²) opened and not opened for scallop dredging in 1999 and/or 2000 under Framework 13 to the Scallop FMP that is included in access area alternatives 2 and 4.

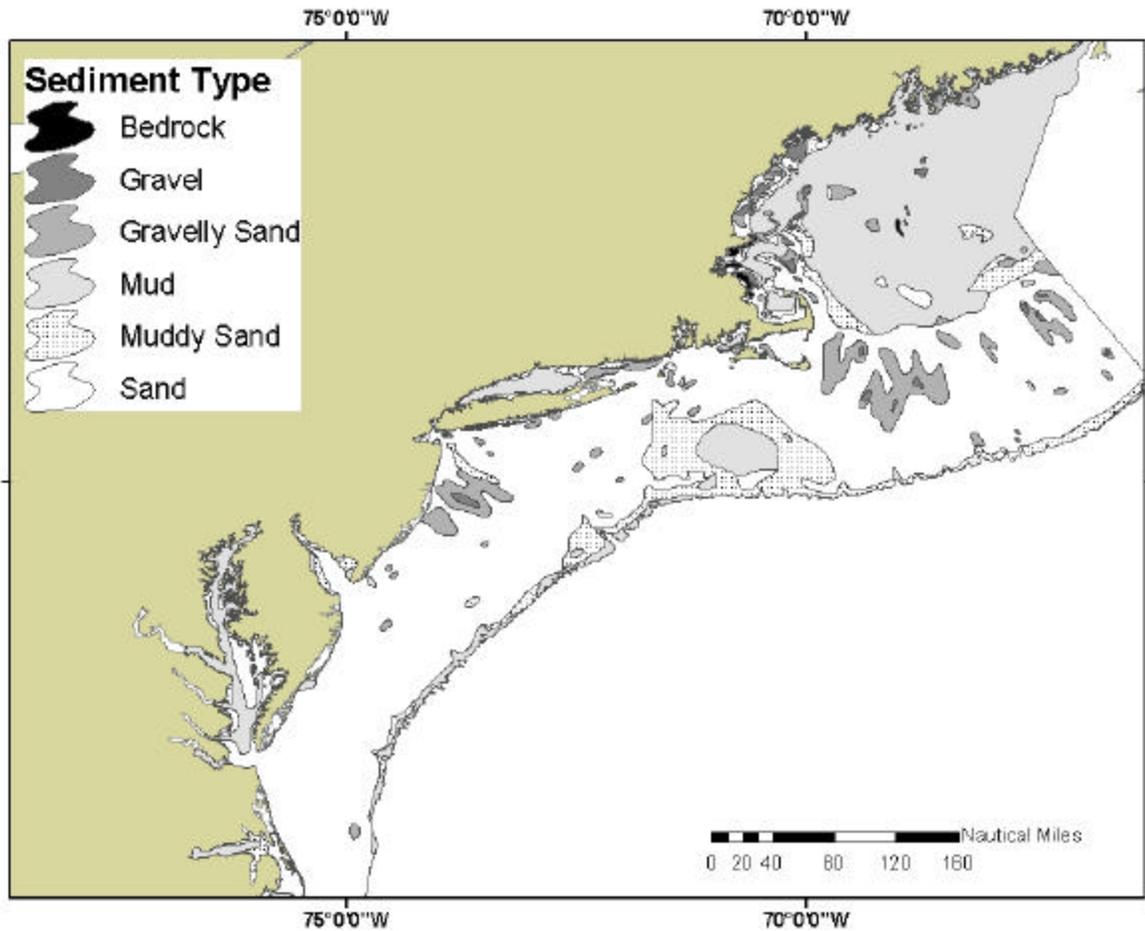
6.2.2.2.2 Substrate

Area of each sediment or substrate type contained within each access alternative

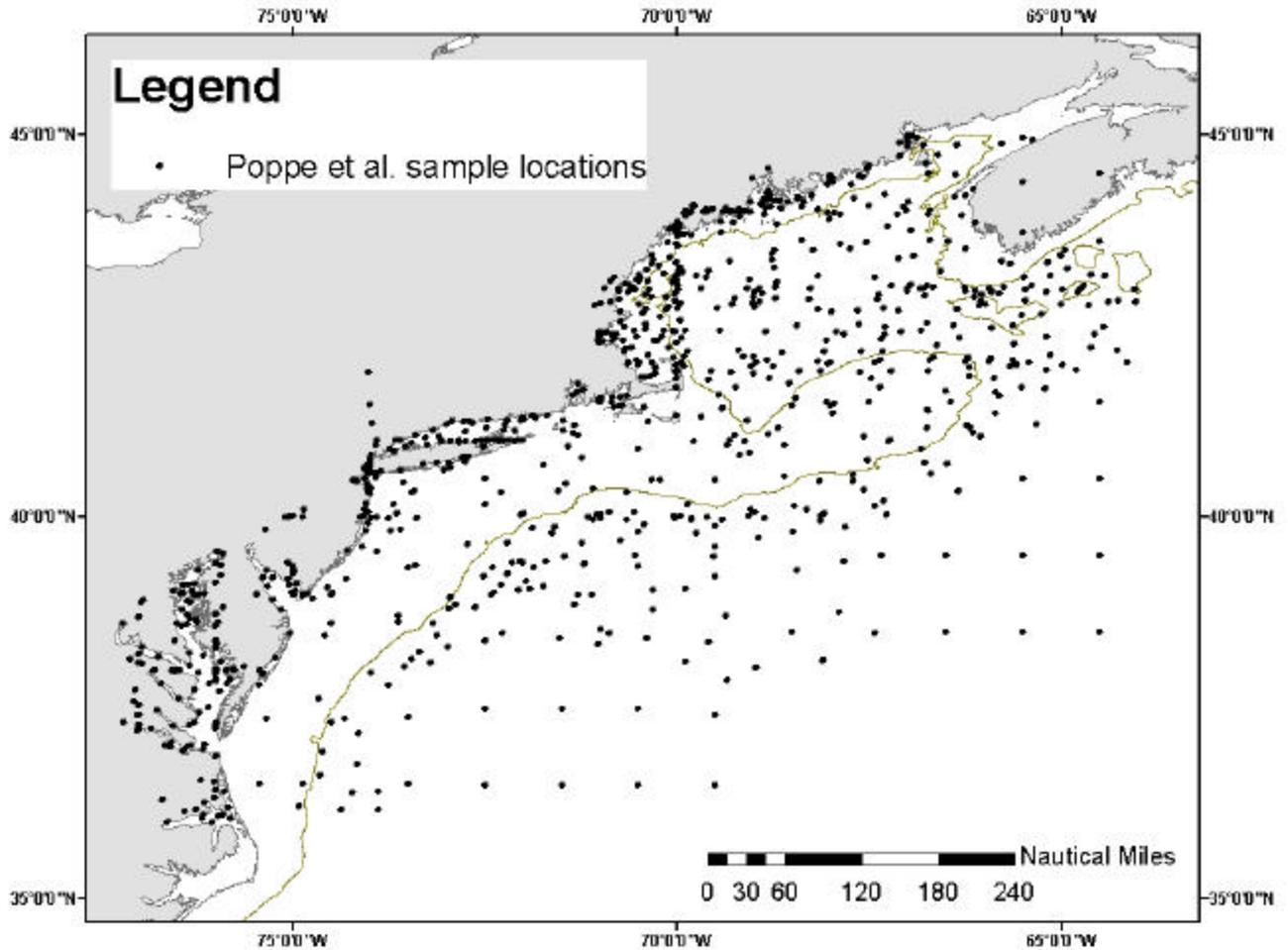
Sediment (or substrate) type is a habitat characteristic that is used to represent different types of benthic habitat that are more or less vulnerable to the adverse effects of fishing. Sandy substrates, for example, are considered to be more dynamic (i.e., more subject to alteration by natural events such as bottom currents) and less vulnerable to disturbance by mobile, bottom-tending fishing gear than structurally more complex “hard bottom” (gravel, cobble, pebble and boulder) habitats, especially if they support attached epifaunal organisms (e.g., sponges, corals, bryozoans, anemones) that can be easily damaged or removed from the bottom by bottom trawls and dredges. Seafloor features and benthic communities found in sandy bottom areas also recover more quickly following disturbance than in hard bottom habitats. This approach is supported by conclusions cited in two recent reports (NREFHSC 2002 and NRC 2002) regarding the vulnerability of different substrates to fishing gear effects.

To establish the sedimentary composition of the various closure options, a U.S. Geological Survey dataset was used (for more information, see Appendix I). This dataset contains sediment data for 975 sampling locations throughout the entire Northeast region (U.S. - Canada border to North Carolina) and was used by Poppe *et al.* (1986, 1989) to map the distribution of nine sediment types, which were reduced to six for the purposes of this analysis (Map 11). Most of the samples that were analyzed in developing this database were collected using bottom grab samplers. Map 12 demonstrates that, at small scales, the USGS maps fail to capture the variety of substrates on a scale at which spatial changes in substrates tend to occur. In the absence of similar datasets covering the range of the Northwest Atlantic Analysis Area (NAAA), however, the USGS substrate maps will serve as the best available data for the purposes of description and analysis. Analyses were based on a digitized sediment data set generated from the sediment map shown in Map 11 and conducted in a GIS format.

The term “gravel,” as used in this analysis, is a collective term that includes granules, pebbles, cobbles, and boulders in order of increasing size. Therefore, the term “gravel” refers to particles larger than sand and generally denotes a variety of “hard bottom” substrates. Granules are slightly coarser than coarse sand and are 2-4 mm in maximum diameter. Pebbles range in size from granules up to 64 mm (2.5 inches) in diameter. Cobbles range in size from pebbles up to 256 mm (10 inches) in diameter. Boulders are larger than cobbles. Common “gravel” bottom types occurring offshore are pebble gravel (pebble pavements); pebble/cobble gravel; and pebble/cobble/boulder mixtures. They all can support attached epifauna and can be vulnerable to disturbance by mobile bottom gear. Pebble gravel and pebble/cobble gravel often overlie sand, and if the gravel has been disturbed, the sand will be visible between pebbles and cobbles.



Map 11. Sediment map of the Northwest Atlantic Analysis Area based on Poppe *et al.* data (1989).



Map 12. Poppe *et al.* (1989) sampling locations.

Table 77 describes the substrate types found within each access alternative based on the USGS substrate database. Substrate data are shown as total area (nm²) and percent composition within each proposed access area. The sediment compositions of most of the access alternatives are very similar; each is primarily made up of sand and gravelly sand. Hard bottom (“gravel” and bedrock) accounts for 1% or less of the substrates in any of the proposed access areas. Alternative 2 is the only alternative with reported muddy sand and mud substrates.

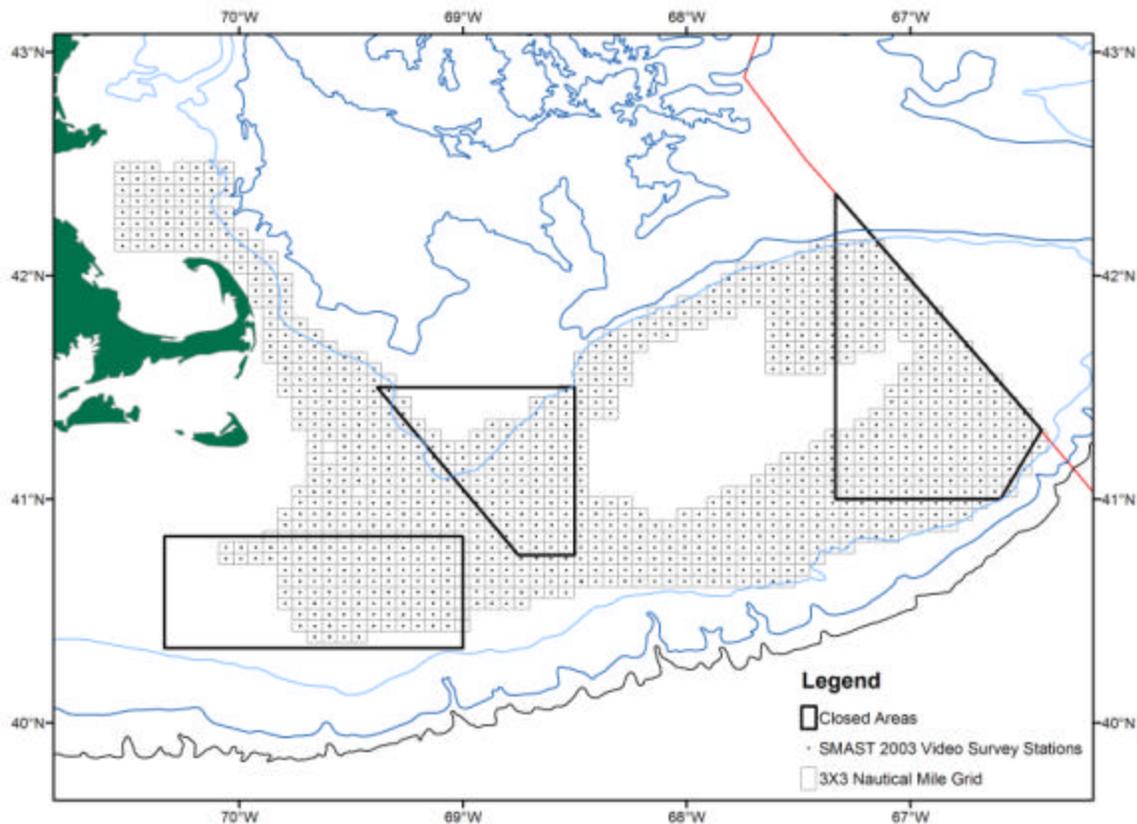
	Area (nm²)	Bedrock	Gravel	Gravelly Sand	Sand	Muddy Sand	Mud
Alt 1	1811	0	13 (<1%)	378 (21%)	1436 (79%)	0	0
Alt 2	3369	0	29 (<1%)	677 (21%)	2514 (75%)	155 (5%)	16 (<1%)
Alt 3	1654	0	13 (<1%)	315 (19%)	1340 (81%)	0	0
Alt 4	2222	0	29 (1%)	495 (22%)	1715 (77%)	0	0

Table 77. Substrate contained in each access area in square nautical miles and percent composition of each area (*based on Poppe et al 1989*)

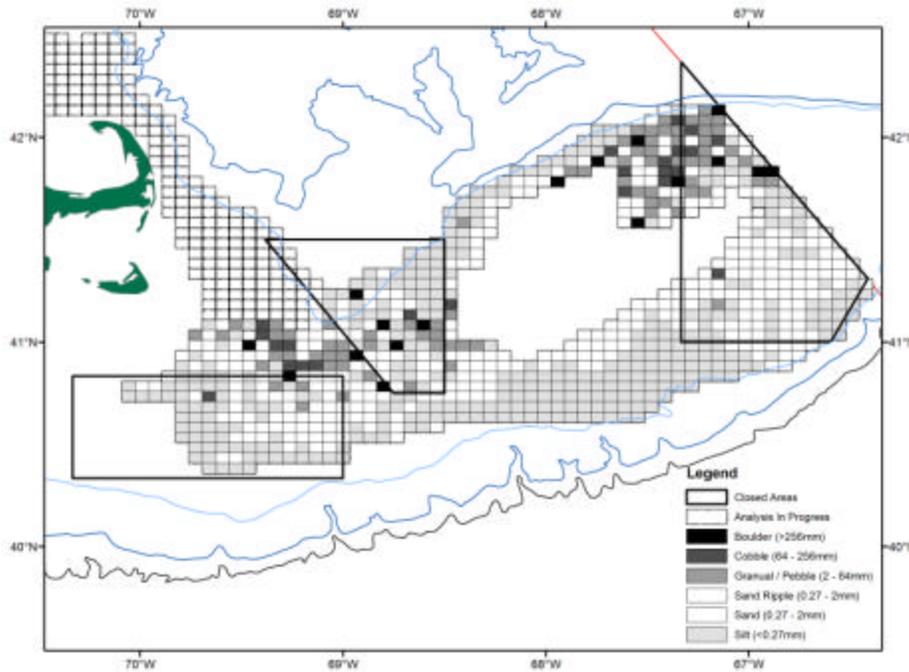
Additional sediment analysis has been provided to the Council from the 2003 University of Massachusetts Dartmouth School of Marine Science and Technology (SMAST) sea scallop video survey. Bottom substrate was identified based on the sediment data collected and classified using a completely different methodology than the USGS sediment data, and it is not appropriate to compare the results at face value. It is not possible to calculate the precise amount of each sediment type reported in each access area using this dataset because the Council does not have access to the data at this point; however, this additional information does provide more descriptive information about bottom substrate types in the area.

SMAST has provided several maps of the sediment types found in and around the area access options in Framework 16/39. In these particular maps only the first quadrant sampled at each station was used to identify the substrate for the entire station (3X3 nautical miles). Substrate was classified according to the Wentworth scale according to the diameter of the largest substrate type observed at each station. If, for example, a boulder was present on a sandy bottom, the substrate was classified as “boulder”. It is also important to point out that multiple images were taken at each station, but this dataset only reflects the substrate classified from the first camera drop; therefore, these maps are based on a single observation, rather than a mean substrate value based on multiple observations taken at each station.

The quadrants where the video survey took place are in Map 13. Map 14 displays the substrate characterization for the entire region, and Map 15 and Map 16 are blow-ups of the same data so that the boundaries of each of the proposed access areas can be compared.

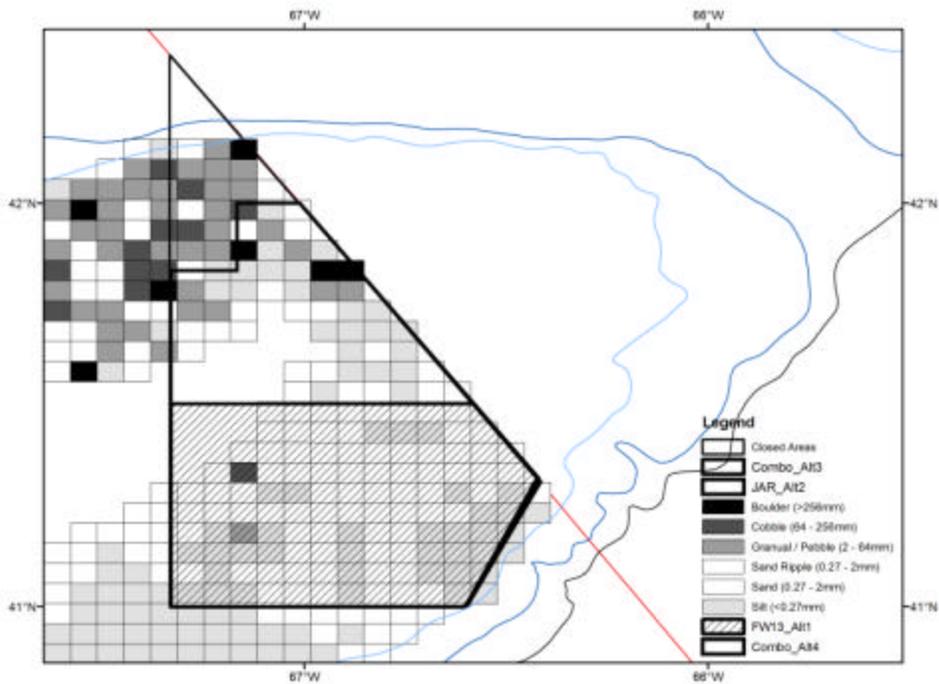


Map 13. SMAST station locations from 2003 Video Survey.

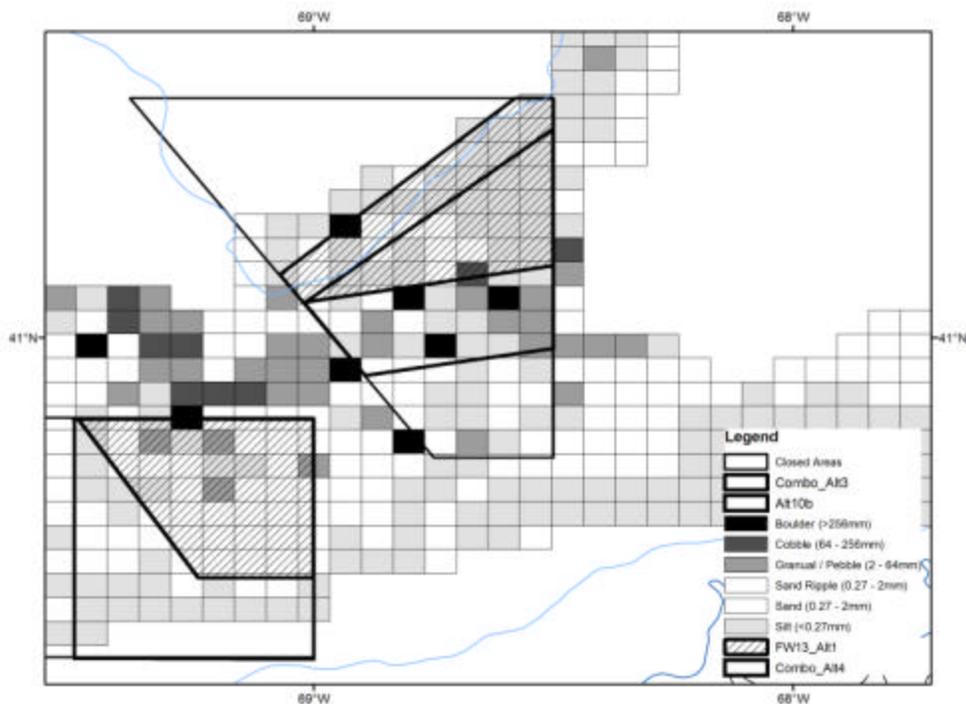


Map 14. Substrate of each station location from the 2003 SMAST Video Survey.

Stations with hatched boundaries have been surveyed, but this data has not been incorporated into the database yet, therefore is not available



Map 15. Substrate of Closed Area II based on the 2003 SMAST Video Survey.



Map 16. Substrate of Closed Area I and part of the Nantucket Lightship closed area, based on the 2003 SMAST Video Survey.

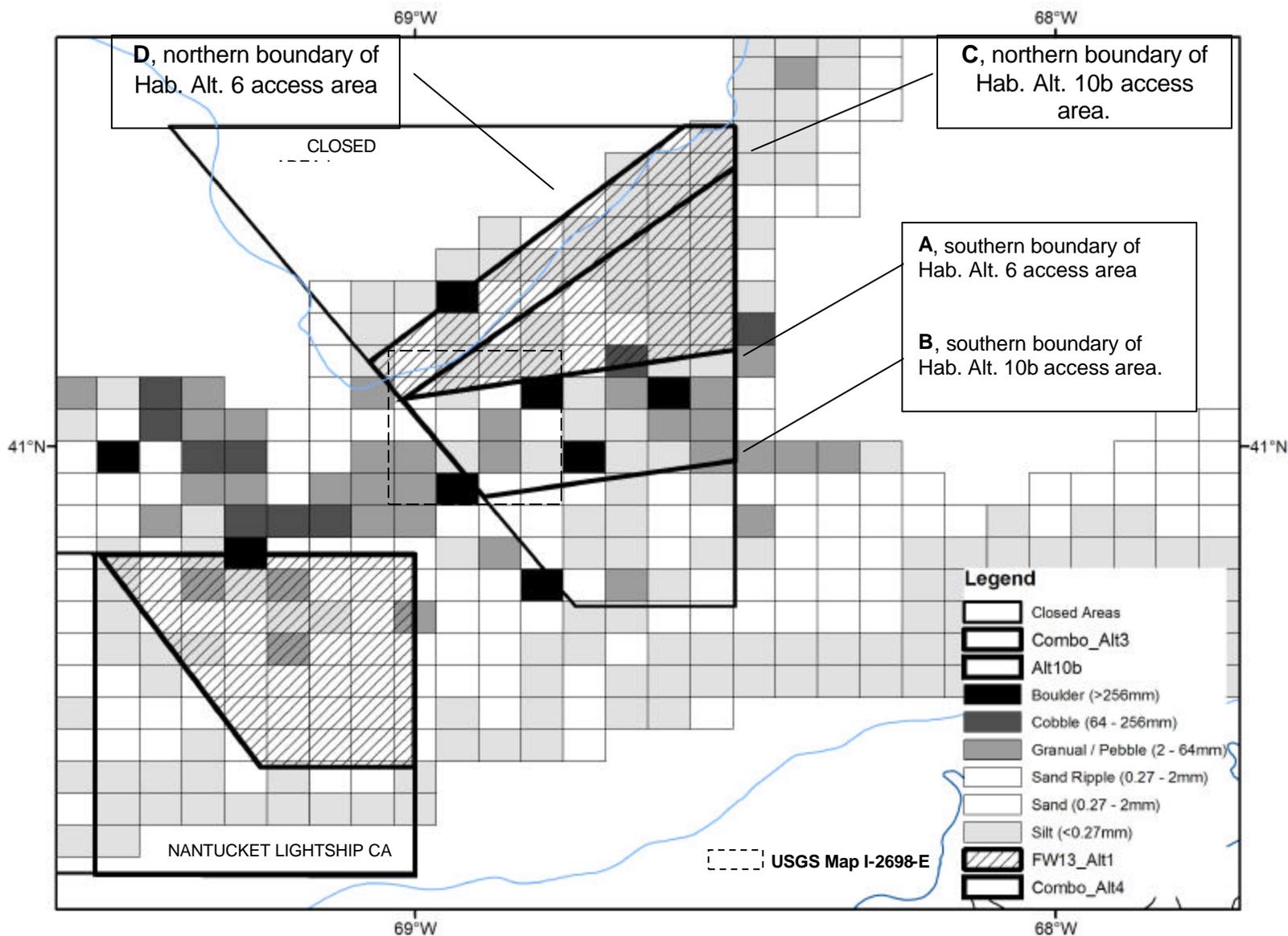
6.2.2.2.1 Focus on Substrate within Closed Area I

The Habitat PDT has raised some concern about some of the proposed access areas within Closed Area I. Two of the access alternatives (Alternative #2 and Alternative #4) propose shifting the access area in the middle of Closed Area I to the south. The area in CA I that was opened to scalloping in Framework Adjustment 13 is shown in Map 17. For Framework 13, the southern boundary of the open area was drawn along the Loran line 9960-Y-43660 in order to prevent disturbance of the complex gravel habitats that lie south of the boundary line.

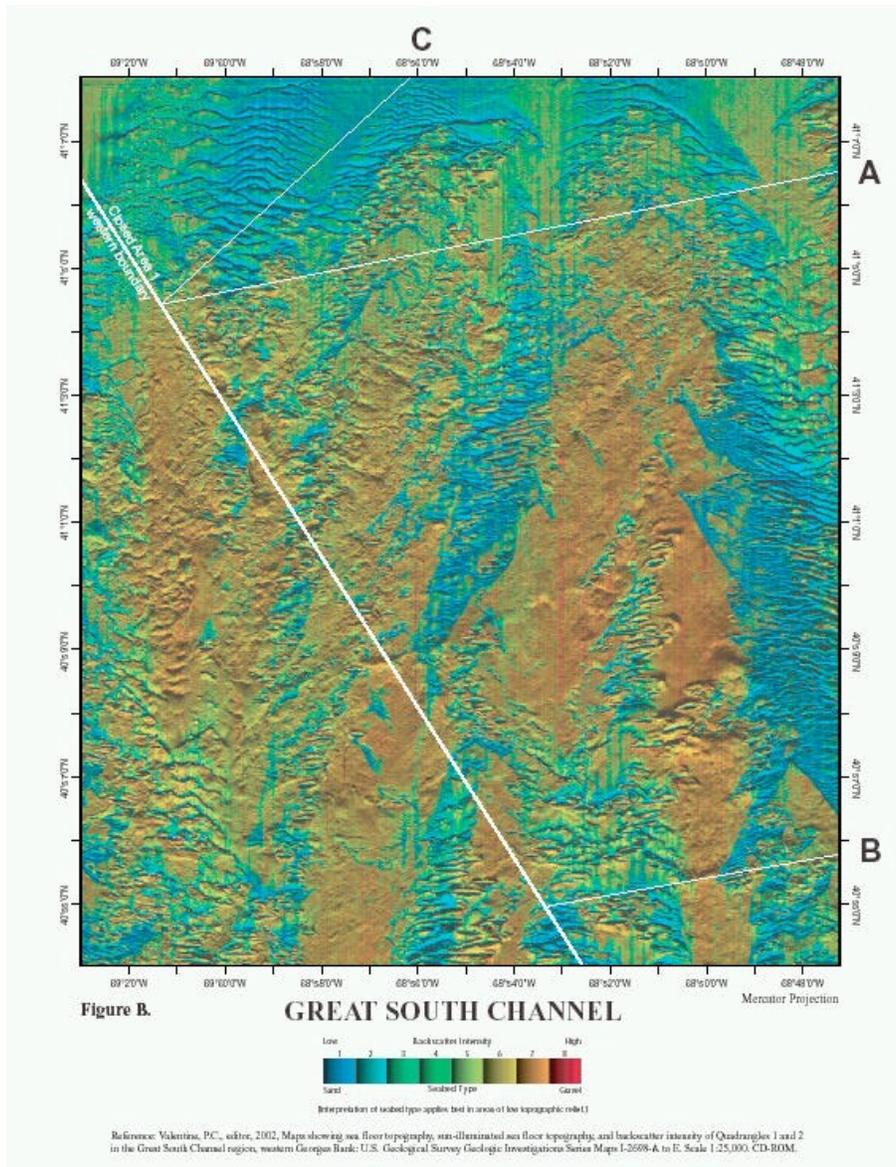
Map 17 shows the relationship between the access areas provided by Habitat Alternative 6 and by Habitat Alternative 10b and the location of the complex habitats shown in the 2003 SMAST Video Survey and the location of where the multibeam imagery was conducted by USGS. Letters A and D indicate the southern and northern boundaries, respectively, of the access area in Habitat Alternative 6. Letters B and C indicate the southern and northern boundaries, respectively, of the access area in Habitat Alternative 10b. The complexity of the seabed in CAI south of Loran 43660 is shown in multibeam imagery of the area (USGS Maps I-2698-A to E)(Map 18) and in the substrate map based on the SMAST 2003 survey. The 2003 SMAST survey shows the most complex habitats in CA I (in terms of gravel substrates) lie in a band between the southern boundary of the Framework 13 access area (as in Habitat Alternative 6) and the southern boundary of the Habitat Alternative 10b access area. Thus, a shift in the southern boundary of the access area from its position in Habitat Alternative 6 to a more southerly position in Habitat Alternative 10b opens the complex habitats to scallop dredging.

The methods used in the 2003 SMAST video survey are summarized in the paragraphs above Map 13, and the methods used in acquiring and displaying the topography, sun-illuminated topography,

and backscatter intensity in the USGS map are summarized here. Briefly, backscatter intensity is a measure of the hardness and roughness of the sea floor, determined by the strength of the sound waves reflected from the seabed during the survey. In this image, backscatter intensity is represented by a suite of eight colors ranging from blue, which represents low intensity (soft bottom), to red, which represents high intensity (hard bottom). The backscatter intensity data are displayed over a shaded relief image of topography. An interpretation of backscatter intensity based on sediment sampling and video imagery of the sea floor in the mapped area suggests that high backscatter values (6-7-8, yellow-orange-red) represent gravel and sandy gravel. Moderate backscatter values (3-4-5, green-yellow) represent sand and burrowed sand, and low backscatter values (1-2, blue) denote clean, fine- to coarse-grained sand.



Map 17. Substrate of Closed Area I and part of the Nantucket Lightship Area, derived from the 2003 SMAST Video Survey. The dashed box represents the area shown in Map 18, displaying a USGS Multibeam Survey image.



Map 18. USGS Map I-2698-E--Imagery of the Great South Channel with access area boundaries identified.

6.2.2.2.3 EFH

The amount of vulnerable species' EFH encompassed by each access alternative

Twenty-three species have been identified as having EFH for at least one life stage moderately or highly vulnerable to the effects of bottom-tending mobile gear (see Gear Effects Evaluation and Adverse Impact Determination in Amendment 10 to the Scallop FMP). In order to evaluate the access areas in terms of what EFH will become available to scallop fishing for limited access programs, the EFH area of each species with EFH vulnerable to bottom tending gear has been evaluated. The EFH area contained in an access alternative is calculated by summing the geographic area (in square nautical miles) of the ten-minute squares of latitude and longitude (or portions thereof) that are designated as EFH for each species and life stages that is bounded by each proposed access option. Geographic EFH designations are defined

in the Omnibus EFH Amendment (NEFMC 1998) and in several species FMPs adopted by the NEFMC and MAFMC. Table 78 summarizes the total and percent-of-total EFH area in the Northwest Atlantic Analysis Area (NAAA) for each of the vulnerable species and life stages (A= Adults, J= Juveniles and E= Eggs) encompassed by each of the access alternatives. The total EFH area for each of these species and life stages is shown in the first column. The sum of EFH area values for all species and life stages in each access alternative and the percent that each alternative makes up the total EFH in the entire NAAA (sum of column 1) are shown at the bottom of the table (sum of Vuln. EFH in each Alternative / Total EFH Area). The higher these values are, the more EFH area is open to scallop fishing for species with vulnerable EFH. The last row of this table is the sum of EFH area in each alternative divided by the total area of the alternative, a scaled for area value of EFH area. This is the only scaled for area value in the table.

Alternative 2 contains more vulnerable EFH area than the other access area alternatives (about 6% of the total EFH area for all species with vulnerable EFH), while Alternative 3 contains the least (about 3.1%). Alternatives 1 and 4 contain about the same, 3.6% and 4.0% respectively. The more EFH area contained by an access alternative, the more vulnerable EFH area is open to impacts from scallop fishing. When the EFH values are scaled for area, Alternative 1 (16.2) contains the most EFH per-unit-of area, followed by Alternative 3 (15.3), and Alternative 2 (14.8) and Alternative 4 (14.9) contain slightly less EFH per-unit of area. Largely because it is larger than the other three access alternatives, access Alternative 2 contains significant amounts of EFH area (>10%) for eight species and life stages while Alternatives 1, 3, and 4 contain the same percentage of EFH area for only several species and life stages. Species with >10% of their total EFH area within Alternative 2 are cod (j), haddock (j,a), barndoor skate (j,a), winter skate (a), and yellowtail flounder (j,a). Juvenile haddock and juvenile barndoor skate also exceed 10% of their EFH area value in Alternative 1. Alternative 3 does not exceed 10% of total EFH area for any of the species with vulnerable EFH and Alternative 4 access areas contain 10% of the total EFH area for haddock (j), barndoor skate (j, a) and yellowtail flounder (j).

Total EFH Area	Species with EFH Vulnerable to Bottom Tending Gear	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		1811 (nm2)		3369 (nm2)		1654 (nm2)		2222 (nm2)	
		EFH area	%	EFH area	%	EFH area	%	EFH area	%
13449	Black sea bass_A	0	0.0%	78	0.6%	0	0.0%	0	0.0%
13503	Black sea bass_J	0	0.0%	77	0.6%	0	0.0%	0	0.0%
22076	Cod_A	1339	6.1%	2059	9.3%	1180	5.3%	1430	6.5%
12968	Cod_J	726	5.6%	1335	10.3%	666	5.1%	858	6.6%
15664	Haddock_A	1389	8.9%	2108	13.5%	1231	7.9%	1480	9.5%
13746	Haddock_J	1483	10.8%	1944	14.1%	1324	9.6%	1587	11.5%
5625	Halibut_A	187	3.3%	255	4.5%	142	2.5%	181	3.2%
5625	Halibut_J	187	3.3%	255	4.5%	142	2.5%	181	3.2%
17891	American plaice_A	280	1.6%	429	2.4%	147	0.8%	147	0.8%
15427	American plaice_J	200	1.3%	113	0.7%	67	0.4%	67	0.4%
14624	Pollock_A	274	1.9%	323	2.2%	160	1.1%	277	1.9%
28685	Ocean Pout A	1457	5.1%	2772	9.7%	1299	4.5%	1715	6.0%
32867	Ocean pout_E	1457	4.4%	2772	8.4%	1299	4.0%	1715	5.2%
18435	Ocean pout_J	393	2.1%	792	4.3%	346	1.9%	555	3.0%
21241	Redfish_A	288	1.4%	266	1.3%	142	0.7%	144	0.7%
22009	Redfish_J	164	0.7%	260	1.2%	66	0.3%	67	0.3%
37038	Red hake_A	859	2.3%	1412	3.8%	700	1.9%	973	2.6%

Total EFH Area	Species with EFH Vulnerable to Bottom Tending Gear	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		1811 (nm2)		3369 (nm2)		1654 (nm2)		2222 (nm2)	
43285	Red hake_J	1345	3.1%	2568	5.9%	1186	2.7%	1683	3.9%
20768	Scup_J	150	0.7%	299	1.4%	150	0.7%	150	0.7%
2345	SkateBarndoor_A	195	8.3%	379	16.2%	195	8.3%	305	13.0%
11264	SkateBarndoor_J	1214	10.8%	1954	17.3%	1056	9.4%	1282	11.4%
14232	SkateClearnose_A	87	0.6%	67	0.5%	21	0.1%	21	0.1%
16449	SkateClearnose_J	87	0.5%	21	0.1%	21	0.1%	21	0.1%
36449	SkateLittle_A	1827	5.0%	3349	9.2%	1669	4.6%	2239	6.1%
50044	SkateLittle_J	1828	3.7%	3350	6.7%	1669	3.3%	2241	4.5%
624	SkateRosette_A	0	0.0%	0	0.0%	0	0.0%	0	0.0%
7903	SkateRosette_J	0	0.0%	1	0.0%	0	0.0%	1	0.0%
11039	SkateSmooth_A	332	3.0%	290	2.6%	175	1.6%	214	1.9%
20929	SkateSmooth_J	392	1.9%	425	2.0%	235	1.1%	274	1.3%
18193	SkateThorny_A	323	1.8%	206	1.1%	165	0.9%	205	1.1%
26586	SkateThorny_J	1000	3.8%	1639	6.2%	842	3.2%	1008	3.8%
25769	SkateWinter_A	1790	6.9%	3071	11.9%	1651	6.4%	2221	8.6%
39452	SkateWinter_J	1828	4.6%	3391	8.6%	1669	4.2%	2239	5.7%
1466	Tilefish_A	0	0.0%	1	0.1%	0	0.0%	0	0.0%
2852	Tilefish_J	0	0.0%	0	0.0%	0	0.0%	0	0.0%
47268	Silver hake_J	1433	3.0%	2732	5.8%	1275	2.7%	1740	3.7%
21884	White hake_J	810	3.7%	1173	5.4%	664	3.0%	744	3.4%
19285	Winter flounder_A	621	3.2%	1720	8.9%	529	2.7%	778	4.0%
19847	Witch flounder_A	0	0.0%	276	1.4%	0	0.0%	77	0.4%
15489	Witch flounder_J	0	0.0%	0	0.0%	0	0.0%	0	0.0%
23102	Yellowtail flounder_A	1809	7.8%	3271	14.2%	1669	7.2%	2238	9.7%
20199	Yellowtail flounder_J	1652	8.2%	2544	12.6%	1560	7.7%	2039	10.1%
827,595	Sum of Vuln. EFH (in nm2)	29,407		49,978		25,311		33,100	
	Sum of Vuln. EFH in each Alternative / Total EFH area	3.6%		6.0%		3.1%		4.0%	
	Sum of Vuln. EFH in each Alternative / Area of each Alternative	16.2		14.8		15.3		14.9	

Table 78. Total and percent of total EFH area within the proposed access areas for species with EFH identified as vulnerable to bottom-tending gear. *Values are not scaled for area, except for last row of table.*

6.2.2.2.4 Trophic Guilds

Biomass encompassed by each access alternative for five guilds: planktivores, amphipod eaters, shrimp and fish eaters, benthivores, and piscivores

Cluster analysis (based on Garrison 2000) was used to define trophic guilds found in the Northwest Atlantic Analysis Area (NAAA). The general guild structure and levels of dietary overlap are consistent across both temporal and spatial scales. Complimentary analyses to the current study within the Georges Bank region identified similar trophic guilds and general stability in the trophic guild structure over the last three decades. Despite the notable changes in species composition in the Northeast shelf fish community, the patterns of trophic resource use and guild structure have remained remarkably consistent. Five trophic guilds were identified for this analysis: benthivores, amphipod eaters, planktivores, piscivores, and shrimp and fish eaters. The species and size ranges used to define these guilds are identified in Appendix I. The Biological Environment section of the Amendment 10 SEIS document describes the trophic guilds in greater detail.

Table 79 describes the total and percent-of-total biomass for each guild that is contained within each access alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction thereof) included within each access area. Table 150 shows the percent composition by access alternative. In general, the alternatives contain about the same amount the various guilds, in terms of percent of total biomass. Alternative 2 does contain significantly more biomass from the Amphipod (Shrimp) eater guild, which includes species like cod, and some species of hake, skate and flounder. All four of the alternatives contain a considerable amount of benthivore biomass, but not when compared to the entire area (only 4-7% of the total benthivore biomass in the entire Northwest Atlantic Analysis Area). Lower values translate into potentially less biomass impacted by the access program.

	Ampshr	Benthic	Pisc	Plank	Shrfis
Alternative 1	371 (14%)	599 (7%)	93 (2%)	303 (3%)	7 (0%)
Alternative 2	648 (24%)	657 (7%)	161 (3%)	575 (5%)	9 (0%)
Alternative 3	358 (13%)	392 (4%)	88 (2%)	236 (2%)	3 (0%)
Alternative 4	505 (13%)	446 (5%)	111 (2%)	357 (3%)	4 (0%)
TOTAL BIOMASS	2681	9128	4921	11836	6509

Table 79. Total and percent-of-total biomass for each guild within each access alternative. Values not scaled for Area. Benthic = benthivore; Ampshr = amphipod/shrimp eater; Plankt = planktivore; Pisc = piscivore; Shrfis = shrimp/fish eater

6.2.2.2.5 Species Assemblage

Biomass encompassed by each access alternative for four species aggregations: elasmobranchs, demersal species, principle groundfish species and pelagic species

Cluster analysis (based on Garrison 2000, Gabriel 1992) was used to define spatial-temporal assemblages for major taxonomic aggregates (i.e., principal groundfish, principal pelagics, demersals, pelagics and elasmobranchs) found in the NAAA. Species that were assigned to these assemblages are identified in Appendix I. The Biological Environment section of the Amendment 10 SEIS describes the assemblages in greater detail.

Table 80 describes the total and percent-of-total biomass for each species assemblage that is contained within each closure alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction thereof) included within each closure area. Overall, none of the alternatives contain a significant portion of any of the species assemblages, as compared to the total assemblage biomass in the region. For example, less than 10% of the total biomass for all of the species assemblages analyzed is contained in any of the alternatives. In

general, only about 3% of total biomass for each assemblage is found within the alternatives. Alternative 2 does contain more biomass for each of the species assemblages than the other three alternatives.

	Elasmo	Pringrd	Prinpel	Demersal	Pelagic
Alternative 1	2324 (2%)	1573 (7%)	180 (3%)	5234 (4%)	314 (2%)
Alternative 2	4527 (5%)	1988 (9%)	306 (5%)	7068(5%)	594 (4%)
Alternative 3	2244 (2%)	1323 (6%)	138 (2%)	3870 (3%)	246 (2%)
Alternative 4	2816 (3%)	1564 (7%)	221 (3%)	4768 (4%)	370 (3%)
TOTAL BIOMASS	92,990	22,140	6,742	129,171	13,841

Table 80. Total and percent-of-total biomass for each assemblage within each access alternative. *Values not scaled for Area. Elasmo=elasmobranch, Pringrd=principle groundfish, Prinpel=principle pelagic species*

6.2.2.2.6 Benthic Species

Biomass encompassed by each access alternative for six species (longhorn sculpin, sea raven, redfish, ocean pout, jonah crab and American lobster) with high levels of association to benthic habitats

Six species (longhorn sculpin, sea raven, redfish, ocean pout, jonah crab and American lobster) were chosen for their close association with benthic habitats for both feeding and protection from predators (see Appendix I for spatial distribution of these species). Table 81 describes the total and percent-of-total biomass for each species that is contained within each access alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction there) included within each alternative. Essentially no redfish or Jonah crab biomass is found within any of the alternatives. However, a significant portion of sculpin is found within Alternative 2. Furthermore Alternatives 1, 3, and 4 contain a significant portion of the total sculpin biomass as well.

	Redfish	Sculpin	SeaRaven	OcPout	Lobster	JonahCrb
Alternative 1	1 (0%)	140 (26%)	57 (1%)	77 (5%)	27 (14%)	1 (0%)
Alternative 2	3 (0%)	248 (47%)	76 (1%)	100 (7%)	52 (26%)	6 (1%)
Alternative 3	0 (0%)	128 (24%)	56 (1%)	73 (5%)	26 (13%)	1 (0%)
Alternative 4	0 (0%)	161 (30%)	65 (1%)	94 (6%)	29 (15%)	2 (0%)
TOTAL BIOMASS	1,504	533	5,871	1,528	200	1,180

Table 81. Total and Percentage of total biomass for each species within each closed area alternative. *Values not scaled for Area.*

6.2.2.2.7 Summary of Impacts

Access into portions of the groundfish mortality closed areas has been granted to the scallop fleet in previous frameworks. Continued access was anticipated in the analysis of Amendment 10, therefore granting access through this framework will not increase impacts beyond that which was recognized as part of the Amendment 10 baseline. There are differences between the access area alternatives in terms of size, degree to which they overlap with portions of the existing groundfish closed areas in Georges Bank that have remained closed to scallop dredges and bottom trawls since December 1994 and portions that were opened temporarily to scallop vessels in 1999 and 2000, substrate, EFH area and composition, and

fish community structure. One of the alternatives (#2) is considerably larger than the other three. Alternatives 1 and 3 would not open up any portions of the existing groundfish closures that have remained closed to scallop dredges and bottom trawls since December 1994, whereas Alternative 4 would open 568 nm² of this bottom area to scallop dredging and Alternative 2 would open up 1,715 nm², mostly in CAII and the NLSP Closed Area. All four of the proposed access areas are almost entirely sand bottom areas, with 1% or less of hard bottom according to the substrate matrix. Because it is larger, Alternative 2 contains a higher percentage of vulnerable EFH area than the other three alternatives. Therefore, Alternative 2 would open more area with vulnerable EFH area than the other alternatives. Likewise, Alternative 3 contains the least amount of EFH area, primarily because it is smaller than the other access alternatives. When the EFH values are scaled for area, Alternatives 1, 3, and 4 contain about the same EFH per square nautical mile: 3.6%, 3.1%, and 4.0% respectively. Alternative 2 does contain slightly more EFH area (even scaled for area) than the other three alternatives (6%). In general, the alternatives contain about the same amount of the various trophic guilds, species assemblages, and benthic species.

The access alternative ultimately picked by the Council must consider the habitat impacts of that alternative, along with the economic, social, and biological impacts of that alternative, as well as the effects on protected resources and other factors. From a habitat perspective, none of these access areas contain a significant portion of complex bottom as compared to the areas identified as habitat closures in both the Scallop and Multispecies FMPs. There is some data that suggests that portions of Closed Area I may be more complex than the substrate matrix evaluation suggests (Section 6.2.2.2.1), however new habitat closed areas on Cashes Ledge, Jeffrey's Bank and north of the Nantucket Lightship closed area may compensate for this potential impact. In general, according to the EFH analysis and the biomass metrics (guild, assemblage and species), all four access alternatives contain about the same EFH area and biomass levels, however Alternative 2 contains more EFH and biomass of most categories because it is larger.

Access alternative 1 is not practicable if the Council decides to pick alternative 2 for habitat closed areas (consistent with the areas proposed in Amendment 13), which was identified as one of the objectives of this framework. Alternative 2 may not be as practicable as Access alternatives 3 and 4 because it opens more area to bottom tending gears than necessary. There are two primary reasons why access alternative 4 may be more practicable than access alternative 3. First, the access area in Access Alternative 3 would reduce access to the scallop biomass in that area by 2/3rds (Table 27). There is not significant scallop biomass in the access area in Closed Area I for Access alternative 3, as compared to the access areas in CAI for Alternatives 4. Therefore the reduced TAC for that area may cause significant economic impacts, as compared to the habitat benefits. On the other hand, the access area proposed in Closed Area I for Access alternative 4 has significant scallop biomass that would support a removal rate similar to the other alternatives. Overall, Alternative 4 is the most practicable and continues to minimize impacts on EFH.

6.2.2.3 Impacts of Management Measures on Endangered and Other Protected Species

The boundaries of the access areas do not represent any particular impacts to sea turtles, either positive or negative, given that the distribution of the four species in northern waters is not only sparse relative to the Mid-Atlantic region, but information is lacking, especially on a fine scale. Therefore, no basis for comparison of the four alternatives is available.

The calculation of scallop target TACs, based on the areas available for harvest is not relevant to the turtle species being considered, again, based on a lack of available information.

6.2.2.4 Economic Impacts

The economic impacts of the four access boundary options are analyzed for both Amendment 10 and Framework 16 mechanical rotations by comparing total scallop landings from all areas for each boundary alternative. Table 82 provides a summary of the results for the 2004-2007 period. Because average annual landings do not differ significantly from one boundary alternative to the other, the economic impacts of these alternatives are expected to be similar. Boundary alternative 2 is estimated to result in largest landings, revenues and total benefits under both Amendment 10 and Alternative rotation schedules, whereas alternative 3 results in smaller landings, revenues and total benefits. The cumulative present value (i.e., discounted) benefits for boundary alternative 3 are estimated be \$12 million to \$15 million less than the value estimated for the boundary alternative 2 for the four years from 2004 to 2007. The numerical results for boundary alternatives 1 and 4 are close to the results for alternative 2.

The relative long-term impacts of the access boundary alternatives would be similar to the short-term impacts with alternative 3 producing the lowest economic benefits (Table 83).

Table 82. Economic impacts of boundary alternatives (Dollar values are expressed in 1996 constant prices.) 2004-2007.

Alternatives	Annual Averages				Cumulative discounted values		
	Landings Million lb.	Ex-vessel price \$/lb	Fleet Revenues Million \$	Operating costs Million \$	Producer Surplus Million \$	Consumer Surplus Million \$	Total Benefits Million \$
Amendment 10 Mechanical rotation							
Boundary alternatives							
Alternative 1	54.74	3.12	170.45	23.55	497.18	371.04	868.22
Alternative 2	55.04	3.11	170.61	23.67	497.30	374.58	871.89
Alternative 3	54.02	3.15	170.07	23.22	496.99	362.14	859.13
Alternative 4	54.94	3.11	170.53	23.63	497.20	373.50	870.70
Alternative mechanical rotation strategy							
Boundary alternatives							
Alternative 1	56.26	3.05	171.11	24.21	497.16	385.93	883.09
Alternative 2	56.63	3.04	171.31	24.35	497.35	390.02	887.37
Alternative 3	55.38	3.10	170.46	23.85	496.16	376.40	872.57
Alternative 4	56.26	3.05	171.11	24.21	497.16	385.93	883.09

Table 83. Economic impacts of boundary alternatives (Dollar values are expressed in 1996 constant prices.) 2008-2013

Alternatives	Annual Averages				Cumulative discounted values		
	Landings Million lb.	Ex-vessel price \$/lb	Fleet Revenues Million \$	Operating costs Million \$	Producer Surplus Million \$	Consumer Surplus Million \$	Total Benefits Million \$
Amendment 10 Mechanical rotation							
Boundary alternatives							
Alternative 1	56.69	3.05	171.47	22.49	542.23	426.60	968.83
Alternative 2	56.94	3.04	171.54	22.59	542.09	429.83	971.93
Alternative 3	55.84	3.08	171.24	22.10	542.92	415.64	958.56
Alternative 4	56.88	3.04	171.50	22.57	542.05	429.22	971.27

Alternatives	Annual Averages				Cumulative discounted values		
	Landings Million lb.	Ex-vessel price \$/lb	Fleet Revenues Million \$	Operating costs Million \$	Producer Surplus Million \$	Consumer Surplus Million \$	Total Benefits Million \$
Alternative mechanical rotation strategy							
Boundary alternatives							
Alternative 1	56.32	3.06	171.76	22.39	543.74	419.77	963.50
Alternative 2	56.55	3.05	171.88	22.48	543.82	422.60	966.42
Alternative 3	55.47	3.10	171.30	22.04	543.37	409.12	952.48
Alternative 4	56.32	3.06	171.76	22.39	543.74	419.77	963.50

6.2.2.5 Social Impacts

Given that the economic analysis (see section above) indicates that differences between the alternatives are relatively negligible in both the short and long term, it is expected that differences in any social impacts that are derivative from economic changes would also be negligible. Not all social impacts are derivative of economic changes, and not all social impacts respond in the same direction as economic ones. However, given previous analysis also indicates that scallops biomass is low in the areas for which access will continue to be prohibited in the preferred alternative, it is expected that scallop fishing would be minimal and thus no additional social impacts would be incurred in comparison to the status quo.

6.2.3 Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on Essential Fish Habitat (EFH) (Section 4.2.3)

There are three habitat closed area alternatives, that would be in effect, depending on whether the habitat closure alternatives in Amendment 10, Amendment 13, or both are approved. The proposed adjustment in Framework 16 would change the habitat closed areas from the ones that the Council approved in Amendment 10 to the Scallop FMP, to the ones that the Council approved in Amendment 13 to the Multispecies FMP, which if approved would apply to scallop fishing gear anyway.

- Alternative 1 are the habitat closures proposed in Amendment 10 and are described in Section 4.2.3.1
- Alternative 2 are the habitat closures proposed in Amendment 13 and are described in Section 4.2.3.2
- Alternative 3 are the union of habitat closures proposed in Amendments 10 and 13, and are described in Section 4.2.3.3

6.2.3.1 Biological Impacts

The changes in the EFH closed area boundaries impact the scallop resource and fishery, by redistributing fishing effort over different areas, and by changing the amount of scallop biomass available to the fishery. The more scallop resource areas that are in EFH closed areas, the less scallop yield can come from the resource, and vice versa. Moreover, when achieving a resource-wide fishing mortality target that is insensitive to the amount of scallops that are in the closed areas, increases in EFH closed areas causes effort in the remaining open areas to increase, and vice versa. Since the access area boundary alternatives are consistent with the EFH closed area boundary alternatives, the potential effects on the resource and yield are analyzed in Sections 6.1.1, 6.2.2.1, and 6.2.11.1.1.

6.2.3.2 Habitat Impacts

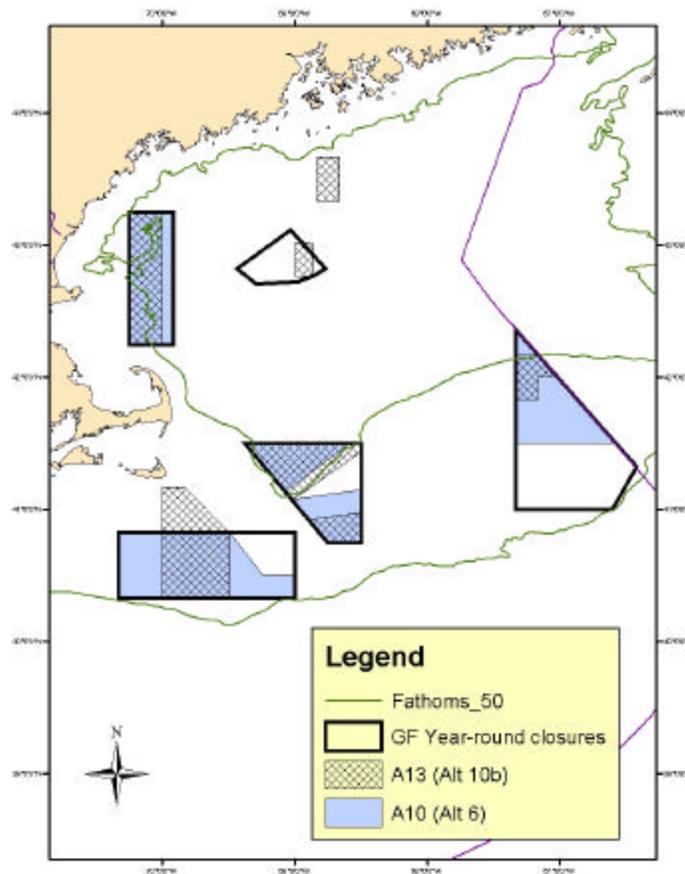
This framework action proposes to modify the habitat closed areas proposed in Amendment 10 to be consistent with the habitat closed areas proposed in Amendment 13. The habitat analyses will assess whether the overall habitat impacts of this modification will have positive, negative or neutral impacts on EFH in the region. In order to answer this question the six habitat metrics used for description and comparison of habitat closure alternatives that the Council approved in Scallop FMP Amendment 10 (Alternative 1) and Multispecies FMP Amendment 13 (Alternative 2) were analyzed, as well as the combination of both (Alternative 3). The consequences of displaced fishing effort for EFH outside the newly defined habitat closures is unknown, and cannot be predicted without a behavioral model of location choice that is not available for this framework action.

Analysis of habitat impacts for these alternatives are described below, measuring the relative effects with respect to six metrics. See Appendix I for a detailed description of the methods used.

6.2.3.2.1 Size and Overlap with Groundfish Closed Areas

Size of each proposed closed area option and overlap with year-round closed areas.

Map 19 compares the habitat closed areas proposed in Amendment 10 (Alternative 6) and Amendment 13 (Alternative 10b). Alternative 3 is the combination of both areas (shaded and hatched areas). The area (in square nautical miles) of all three alternatives is shown in Table 84. Alternative 3 is larger than Alternative 1, and Alternative 1 is significantly larger than Alternative 2, by 1,230 square nautical miles. Table 85 displays the area and percentage of overlap between each alternative and three different scenarios: existing groundfish closed areas (Type A), areas that have been off-limits to groundfish and scallop gear on a continuous basis since December, 1994 (Georges Bank) or May 1998 (western Gulf of Maine) (Type B), and areas that were exposed to scallop dredging during 1999 and 2000 under the Framework 13 Scallop Access Program (Type C). These distinctions are important because the potential added value of continued habitat protection is different for type B and C closures. Alternative 1 is completely contained by the areas that were off limits to the scallop fleet in FW13 (Type B) since those are the boundaries that were used to define this alternative. A significant portion of Alternative 2 also overlaps with the areas that were off limits under Framework 13 (about 94%). While Alternative 2 and Alternative 3 do not overlap with the Type A and Type B closures to the degree that Alternative 1 does, the percent of overlap values are very high for both alternatives.



Map 19. Overlap of habitat closed areas proposed in Amendment 10 (hatched) versus habitat closed areas proposed in Amendment 13 (shaded)

ALTERNATIVE	AREA (nm²)
1 (6)	4041
2 (10(b))	2811
3 (6 AND 10b)	4744

Table 84 - Total area contained inside each closed area alternative (in square nautical miles)

Alternative	Total Area	Type A		Type B		Type C	
		Area (nm ²)	Percent overlap	Area (nm ²)	Percent overlap	Area (nm ²)	Percent Overlap
1 (6)	4041	4041	100%	4041	100%	0	0%
2 (10(b))	2811	2345	83%	2654	94%	157	6%
3 (6 AND 10b)	4744	4281	90%	4587	97%	157	3%

Table 85. Degree of overlap with the Groundfish closed areas (Type A), outside the FW13 access areas (Type B), and within the FW13 access areas (Type C).

6.2.3.2.2 Substrate

Area of each sediment or substrate type contained within each proposed closure.

Sediment (or substrate) type is a habitat characteristic that is used, in the comparison of habitat closed area alternatives, to represent different types of benthic habitat that are more or less vulnerable to the adverse effects of fishing. Analyses were based on a digitized sediment data set generated from the sediment map provided by the USGS. Table 86 shows the percent that each sediment type makes up of the total area of each sediment type in the Northwest Atlantic Analysis Area (NAAA), while Table 87 shows the percent sediment composition of each closed area alternative. See Appendix I for a description of the Northwest Atlantic Analysis Area.

All three alternatives contain a significant portion of the gravel and gravelly sand reported in the sediment database (Table 86). In addition, Alternatives 2 and 3 contain a small amount of reported bedrock. In general, the sediment composition of all three alternatives is similar; they are primarily made up of sandy bottom (Table 87). As compared to the substrate types found within the four access alternatives, these areas contain significantly more complex bottom.

	AREA		Bedrock		Gravel		Gravelly Sand		Sand		Muddy Sand		Mud	
Total	83,550		150		556		4236		49620		7141		20378	
1 (6)	4041	4.8%	0	0%	92	17%	666	16%	2,454	5%	413	6%	413	2%
2 (10(b))	2811	3.4%	4	2%	105	19%	461	11%	1,653	3%	147	2%	443	2%
3 (6 AND 10b)	4744	5.7%	4	3%	127	23%	770	18%	2817	6%	413	6%	612	3%

Table 86. Total and percent of total sediment type contained inside each closed area alternative, as compared to the entire Northwest Atlantic analysis area.

	Bedrock	Gravel	Gravelly Sand	Sand	Muddy Sand	Mud
1 (6)	0%	2%	16%	61%	10%	10%
2 (10(b))	0%	4%	16%	58%	5%	16%
3 (6 AND 10b)	0%	3%	16%	59%	9%	13%

Table 87. Sediment composition of each closed area alternative (Note: the values add up to 100%).

Focus on the Substrate within Closed Area I

The Habitat PDT has raised some concern about the shift in the habitat closed area in the middle of Closed Area I to the south. For FW 13, the southern boundary of the open area was drawn along the

Loran line 9960-Y-43660 in order to prevent disturbance of the complex gravel habitats that lie south of the boundary line. Map 14 shows the relationship between the access areas provided by Habitat Alternative 1 and by Habitat Alternative 2 and the location of the complex habitats shown in the 2003 SMAST Video Survey and the location of where the multibeam imagery research was conducted by USGS. Letters A and D indicate the southern and northern boundaries, respectively, of the access area in Habitat Alternative 1. Letters B and C indicate the southern and northern boundaries, respectively, of the access area in Habitat Alternative 2. The complexity of the seabed in CAI south of Loran 43660 is shown in multibeam imagery of the area (USGS Maps I-2698-A to E)(Map 18) and in the substrate map based on the SMAST 2003 survey. The 2003 SMAST survey shows the most complex habitats in CA I (in terms of gravel substrates) lie in a band between the southern boundary of the FW13 access area (as in Alternative 1) and the southern boundary of the Habitat Alternative 2 access area. Thus, a shift in the southern boundary of the access area from its position in Habitat Alternative 1 to a more southerly position in Habitat Alternative 2 potentially opens the complex habitats to scallop dredging if access is permitted.

6.2.3.2.3 Essential Fish Habitat

The amount of vulnerable species EFH encompassed by each proposed closure

Non-scaled for Area EFH Analyses

Twenty-three species have been identified as having EFH for at least one life stage moderately or highly vulnerable to the effects of bottom-tending mobile gear. Closed areas provide habitat protection for these species and life stages. This analysis can be used to evaluate how the different alternatives rank in terms of EFH protection for the species that are moderately or highly vulnerable to bottom tending gear. The EFH area contained in a closure is calculated by summing the geographic area (in square nautical miles) of the ten-minute squares of latitude and longitude (or portions thereof) that are designated as EFH for each species and life stages that is bounded by each proposed closure. Table 88 summarizes the total and percent-of-total EFH area in the Northwest Atlantic Analysis Area (NAAA) for each of the vulnerable species and life stages (A= Adults, J= Juveniles and E= Eggs) encompassed by each of the closed area alternatives. The total EFH area for each of these species and life stages is shown in the first column. The sum of EFH area values for all species and life stages in each closure alternative and the percent that each closure sum makes up the total EFH in the entire NAAA (sum of column 1) are shown at the bottom of the table.

Overall, Alternative 3 contains more area with EFH designations for species with EFH moderately or highly vulnerable to bottom tending gear than the other two alternatives. However, these values are not scaled for area. Alternative 3 contains significant amounts of EFH area (>10%) for 20 species. Alternative 1 contains significant amounts of EFH area (>10%) for thirteen species and life stages and Alternative 2 for only six. Species with >15% of their EFH area in both Alternative 1 and Alternative 3 are cod (J), barndoor skate (J), and halibut (J,A). Only juvenile cod EFH area scores this high in Alternative 2. Species with notably more EFH area in Alternatives 1 and 3 are ocean pout (A), barndoor, little, and winter skate (J,A), red hake (J), silver hake (J), winter flounder (A), and yellowtail flounder (J,A).

Table 88 - Total and percent-of-total EFH area for species with EFH identified as vulnerable to bottom-tending mobile gear. *Values are not scaled for area

Total EFH AREA nm2	Species	Alternative 1 (6) 4041nm ²		Alternative 2 (10b) 2811 nm ²		Alternative 3 (6 AND 10b) 4744 nm ²	
		nm2	%	nm2	%	nm2	%
13449	Black sea bass A	152	1.1	76	0.6	152	1.1
13503	Black sea bass J	154	1.1	79	0.6	155	1.2
22076	Cod_A	2545	11.5	2047	9.3	3096	14.0
12968	Cod_J	2254	17.4	1981	15.3	2642	20.4
15664	Haddock_A	2339	14.9	1752	11.2	2706	17.3
13746	Haddock_J	1661	12.1	1404	10.2	2028	14.8
5625	Halibut_A	862	15.3	797	14.2	907	16.1
5625	Halibut_J	862	15.3	797	14.2	907	16.1
17891	American plaice_A	1545	8.6	1413	7.9	1915	10.7
15427	American plaice_J	1240	8.0	1345	8.7	1610	10.4
14624	Pollock_A	1255	8.6	1268	8.7	1610	11.0
28685	Ocean Pout A	3174	11.1	1956	6.8	3414	11.9
32867	Ocean pout_E	1	0.0	2275	6.9	3808	11.6
18435	Ocean pout_J	1427	7.7	1058	5.7	1574	8.5
21241	Redfish_A	1465	6.9	1511	7.1	1851	8.7
22009	Redfish_J	1593	7.2	1521	6.9	1932	8.8
37038	Red hake_A	2431	6.6	1901	5.1	2818	7.6
43285	Red hake_J	3324	7.7	2166	5.0	3750	8.7
20768	Scup_J	562	2.7	493	2.4	754	3.6
2345	SkateBarndoor_A	331	14.1	224	9.6	404	17.2
11264	SkateBarndoor_J	1823	16.2	1099	9.8	1983	17.6
14232	SkateClearnose_A	244	1.7	266	1.9	311	2.2
16449	SkateClearnose_J	452	2.7	518	3.2	519	3.2
36449	SkateLittle_A	2900	8.0	1703	4.7	3356	9.2
50044	SkateLittle_J	3286	6.6	1997	4.0	3668	7.3
624	SkateRosette_A	0	0.0	0	0.0	0	0.0
7903	SkateRosette_J	0	0.0	0	0.0	0	0.0
11039	SkateSmooth_A	1252	11.3	1286	11.6	1488	13.5
20929	SkateSmooth_J	1551	7.4	1538	7.3	1943	9.3
18193	SkateThorny_A	1333	7.3	1473	8.1	1732	9.5
26586	SkateThorny_J	2453	9.2	1847	6.9	2849	10.7
25769	SkateWinter_A	2572	10.0	1570	6.1	2970	11.5
39452	SkateWinter_J	3475	8.8	2072	5.3	3864	9.8
1466	Tilefish_A	0	0.0	0	0.0	0	0.0
2852	Tilefish_J	0	0.0	0	0.0	0	0.0
47268	Silver hake_J	3336	7.1	2077	4.4	3730	7.9
21884	White hake_J	1815	8.3	1512	6.9	2233	10.2
19285	Winter flounder_A	2361	12.2	1585	8.2	2760	14.3
19847	Witch flounder_A	1445	7.3	1186	6.0	1679	8.5
15489	Witch flounder_J	440	2.8	511	3.3	677	4.4
23102	Yellowtail flounder_A	2838	12.3	1511	6.5	3096	13.4
20199	Yellowtail flounder_J	1945	9.6	1184	5.9	2157	10.7
827595	SUM of vulnerable EFH	64,701		51,004		79,048	
Sum of Vulnerable EFH in closure / sum of total Vulnerable EFH		7.8%		6.2%		9.6%	

Scaled for Area EFH Analysis

The following section summarizes results of habitat metric analyses in more detail for those species that have been defined as adversely impacted by mobile, bottom-tending gears, i.e., in a manner that is more than minimal and not temporary in nature. This analysis begins with a list of the species and life stages with EFH that has been determined to be either moderately or highly vulnerable to mobile, bottom-tending gears (Table 89). The analysis evaluates the EFH protection afforded by each area closure alternative on a per-unit-area basis (relative effectiveness indices) for four different groups of species: 1) species with EFH moderately or highly vulnerable to bottom tending gear, 2) species with EFH highly vulnerable to bottom tending gear, 3) species with EFH highly vulnerable to bottom tending gear and are managed in New England (Table 90), and 4) species with highly vulnerable EFH and are overfished. (Table 91).

Species	Lifestage	Otter Trawl Vulnerability	Scallop Dredge Vulnerability	Clam Dredge Vulnerability
American Plaice	A	High	High	None
American Plaice	J	Mod	Mod	None
Atlantic Cod	A	Mod	Mod	Mod
Atlantic Cod	J	High	High	None
Atlantic Halibut	A	Mod	Mod	None
Atlantic Halibut	J	Mod	Mod	None
Barndoor Skate	A	Mod	Mod	Low
Barndoor Skate	J	Mod	Mod	Low
Black Sea Bass	A	High	High	High
Black Sea Bass	J	High	High	High
Clearnose Skate	A	Mod	Mod	Mod
Clearnose Skate	J	Mod	Mod	Mod
Haddock	A	High	High	Low
Haddock	J	High	High	Low
Little Skate	A	Mod	Mod	Mod
Little Skate	J	Mod	Mod	Mod
Ocean Pout	A	High	High	High
Ocean Pout	J	High	High	High
Ocean Pout	L	High	High	High
Ocean Pout	E	High	High	High
Pollock	A	Mod	Mod	Low
Red Hake	A	Mod	Mod	Low
Red Hake	J	High	High	High
Redfish	A	Mod	Mod	None
Redfish	J	High	High	None
Rosette Skate	A	Mod	Mod	Mod
Rosette Skate	J	Mod	Mod	Mod
Scup	J	Mod	Mod	Mod
Silver Hake	J	Mod	Mod	Mod
Smooth Skate	A	High	High	None
Smooth Skate	J	Mod	Mod	None
Thorny Skate	A	Mod	Mod	None
Thorny Skate	J	Mod	Mod	None
Tilefish	A	High	Low	None
Tilefish	J	High	Low	None
White Hake	J	Mod	Mod	None
Winter Flounder	A	Mod	Mod	Mod
Winter Skate	A	Mod	Mod	Mod
Winter Skate	J	Mod	Mod	Mod
Witch Flounder	A	Mod	Low	Low
Witch Flounder	J	Mod	Low	None
Yellowtail Flounder	A	Mod	Mod	Mod
Yellowtail Flounder	J	Mod	Mod	Mod

Table 89 - Species and life stages with EFH that is moderately or highly vulnerable to mobile, bottom-tending gears.

Species	Lifestage	OT Vulnerability	SD Vulnerability
American Plaice	A	High	High
Atlantic Cod	J	High	High
Haddock	A	High	High
Haddock	J	High	High
Ocean Pout	A	High	High
Ocean Pout	J	High	High
Ocean Pout	L	High	High
Ocean Pout	E	High	High
Red Hake	J	High	High
Redfish	J	High	High
Smooth Skate	A	High	High

Table 90 - Summary of those species managed by the New England Fishery Management Council with EFH deemed highly vulnerable to mobile bottom tending gears.

Table 91 - Summary of overfished species with EFH that is highly vulnerable to mobile bottom tending gears.

Species	Lifestage	OT Vulnerability	SD Vulnerability
Atlantic Cod	J	High	High
Black Sea Bass	A	High	High
Black Sea Bass	J	High	High
Tilefish	A	High	Low
Tilefish	J	High	Low

According to Table 92, Alternative 2 is more effective at protecting EFH for species with EFH both highly and moderately vulnerable to bottom tending gear (18.14). Relative effectiveness is a measure of the EFH area in an alternative divided by the total area of the alternative, thus an EFH value per-unit of area. Even though Alternative 3 is larger than Alternative 1, it still contains more EFH per-unit of area. According to Table 93, Alternative 2 is also more effective at protecting EFH for species with EFH highly vulnerable to bottom tending gear managed in New England, and species with EFH highly vulnerable that are overfished. Overall, Alternative 3 contains more EFH area than Alternative 2, but since Alternative 2 is smaller, the scaled for area analyses show that Alternative 2 is a more effective habitat closed area, more EFH per-unit of area.

Alternatives	Species with Medium/Highly Vulnerable EFH	Species with Highly Vulnerable EFH
	Sum*	Sum*
1 (6)	16.01	4.67
2 (10b)	18.14	6.04
3 (6 AND 10b)	16.66	5.39

Table 92 - Relative Effectiveness of both Habitat Closed Area Alternatives in Protecting EFH for Two Categories of Species and Life Stages

*Values are total EFH area (in square nautical miles) per square nautical mile in each closed area for all moderately and highly vulnerable species and life stages in the Northeast region, and for only the highly vulnerable species and life stages.

Alternatives	New England Species with Highly Vulnerable EFH	Overfished Species with Highly Vulnerable EFH
	Sum*	Sum*
1 (6)	4.60	0.63
2 (10b)	5.98	0.76
3 (6 AND 10b)	5.32	0.62

Table 93 - Relative Effectiveness of both Habitat Closed Area Alternatives in Protecting EFH for Two Categories of Species and Life Stages.

*Values are total EFH area (in square nautical miles) per square nautical mile in each closed area, for the highly vulnerable species and life stages in New England, and for highly vulnerable species in the Northeast region.

6.2.3.2.4 Trophic Guilds

Biomass encompassed by each closure for five guilds: planktivores, amphipod eaters, shrimp and fish eaters, benthivores, and piscivores

Cluster analysis (based on Garrison 2000) was used to define trophic guilds found in the Northwest Atlantic Analysis Area (NAAA). The general guild structure and levels of dietary overlap are consistent across both temporal and spatial scales. Five trophic guilds were identified for this analysis: benthivores, amphipod eaters, planktivores, piscivores, and shrimp and fish eaters. Appendix I identifies the specific group of species that are in each guild. Table 94 describes the total and percent-of-total biomass for each guild that is contained within each closure alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction thereof) included within each closure area. Table 95 shows the percent composition by closure.

In terms of percent of total guild biomass contained in each area, Alternative 1 and Alternative 3 rank very similarly for most guilds analyzed, even though Alternative 3 is larger in area than Alternative 1 (Table 94). Furthermore, Alternative 2 contains a significant amount of guild biomass as well, even though it is significantly smaller than the other two alternatives. Alternatives 1 and 3 do contain significantly more biomass of the amphipod/shrimp eater guild. The overall guild composition of all three closures is similar, primarily made up of benthivore biomass (Table 95).

	Benthic		Ampshr		Plankt		Pisc		Shrfis	
Total	9,128		2,681		11,836		4,921		6,509	
1 (6)	1,296	14.2%	489	18.2%	653	5.5%	190	3.9%	935	14.4%
2 (10(b))	1,249	13.7%	222	8.3%	398	3.4%	127	2.6%	885	13.6%
3 (6 AND 10b)	1,537	16.8%	511	19.1%	760	6.4%	207	4.2%	1,015	15.6%

Table 94 - Total and percent-of-total biomass for each guild within each closed area *alternative*. Values are not scaled for area.

Benthic = benthivore; Ampshr = amphipod/shrimp eater; Plankt = planktivore; Pisc = piscivore; Shrfis = shrimp/fish eater

	Benthic	Ampshr	Plankt	Pisc	Shrfis
1 (6)	36%	14%	18%	5%	26%
2 (10b)	43%	8%	14%	4%	31%
3 (6 AND 10b)	38%	13%	19%	5%	25%

Table 95 - Guild composition of each closure alternative. *Values are not scaled for area.*

Benthic = benthivore; Ampshr = amphipod/shrimp eater; Plankt = planktivore; Pisc = piscivore; Shrfis = shrimp/fish eater

6.2.3.2.5 Species Assemblage

Biomass encompassed by each closure for three species aggregations: elasmobranchs, demersal species, and pelagic species.

Cluster analysis (based on Garrison 2000, Gabriel 1992) was used to define spatial-temporal assemblages for major taxonomic aggregates (i.e., principal groundfish, principal pelagics, demersals, pelagics and elasmobranchs) found in the NAAA. Appendix I identifies the specific group of species that are in each assemblage. Table 96 describes the total and percent-of-total biomass for each species assemblage that is contained within each closure alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction thereof) included within each closure area. Table 97 shows the percent composition by closure.

Similar to the guild results, these three alternatives score very similarly for percent of total species assemblage biomass (Table 96). Alternative 3 contains more of each assemblage across the board, but considering that this area is much larger, the composition of each area is almost identical in terms of amount of biomass values for the five different assemblages within each closure (Table 97).

	Elasmo		Pringrd		Prinpel		Demersal		Pelagic	
Total	92,990		22,140		6,742		129,171		13,841	
1 (6)	6,529	7.0%	3,243	14.6%	416	6.2%	10,374	8.0%	687	5.0%
2 (10b)	4,866	5.2%	2,800	12.6%	298	4.4%	8,063	6.2%	434	3.1%
3 (6 AND 10b)	7,249	7.8%	3,653	16.5%	489	7.3%	11,567	9.0%	807	5.8%

Table 96 - Total and percent-of-total biomass for each assemblage within each closed area alternative

Elasmo=elasmobranch, Pringrd=principle groundfish, Prinpel=principle pelagic species

	Elasmo	Pringrd	Prinpel	Demersal	Pelagic
1 (6)	31%	15%	2%	49%	3%
2 (10b)	30%	17%	2%	49%	3%
3 (6 AND 10b)	31%	15%	2%	49%	3%

Table 97 - Assemblage composition of each closure alternative

Elasmo=elasmobranch, Pringrd=principle groundfish, Prinpel=principle pelagic species

6.2.3.2.6 Benthic Species

Biomass encompassed by each closure for six species (longhorn sculpin, sea raven, redfish, ocean pout, jonah crab and American lobster) with high levels of association to benthic habitats.

Six species (longhorn sculpin, sea raven, redfish, ocean pout, jonah crab and American lobster) were chosen for their close association with benthic habitats for both feeding and protection from predators. Table 98 describes the total and percent-of-total biomass for each species that is contained within each closure alternative. Biomass is measured as the sum of the mean wt (kg) per tow from the 1995-2001 bottom trawl surveys for each ten-minute square (or fraction there) included within each closure area. Table 99 shows the percent composition by closure.

Redfish biomass is high in all three alternatives. Furthermore, all three alternatives contain a significant amount of longhorn sculpin and sea raven biomass. Overall, the alternatives contain similar amounts of all six species.

	LhnScpn		SeaRvn		Redfish		OcPout		JonCrab		Lobster	
Total	1504.2		533.4		5870.6		1527.9		199.7		1179.8	
1 (6)	245	16.3%	73	13.6%	835	14.2%	63	4.1%	11	5.3%	47	3.9%
2 (10b)	141	9.4%	56	10.5%	778	13.3%	40	2.6%	7	3.5%	23	1.9%
3 (6 AND 10b)	262	17.4%	76	14.3%	903	15.4%	67	4.4%	12	6.0%	50	4.2%

Table 98 - Total and Percentage of total biomass for each species within each closed area alternative

	LhnScpn	SeaRvn	Redfish	OcPout	JonCrab	Lobster
1 (6)	19%	6%	66%	5%	1%	4%
2 (10b)	13%	5%	74%	4%	1%	2%
3 (6 AND 10b)	19%	6%	65%	5%	1%	4%

Table 99 - Species composition of each closure alternative

6.2.3.2.7 Summary of Habitat Impacts (Habitat Alternative 6 versus Habitat Alternative 10b)

Alternative 2 will indefinitely close 2,811 square nautical miles in seven discrete areas on Georges Bank and in the Gulf of Maine to mobile bottom tending gear. Most of the area (94%) lies within the existing Groundfish closed areas, in areas that have been closed since the mortality closures were first established. This alternative also closes “new” areas, such as Jeffrey’s Bank and north of the Nantucket Lightship closed area (Table 85). In terms of substrate composition, the alternatives are relatively similar. Alternative 3 contains the most EFH area, but it is significantly larger as well. Alternative 1 would provide similar EFH protection as Alternative 2, but Alternative 2 is about 1/3 less in size, so Alternative 2 is more effective at protection of EFH for species with life history stages that are vulnerable to mobile, bottom tending gears (Table 92). For this reason, and because the proposed action would create consistent habitat protection measures (Alternative 2), Alternative 1 was determined not practicable. Therefore, the habitat impacts of modifying Alternative 1 habitat areas to Alternative 2 habitat areas in this framework action is likely to have at worst, neutral, and at best, positive impacts on EFH since more vulnerable EFH is contained per-unit of area in Alternative 2 (10b).

In terms of feasibility, Alternative 2 is more feasible than the other alternatives, and making the habitat closed areas consistent between the two plans was one of the objectives identified by the Council for this Framework. One of the primary reasons the Council chose the areas in Alternative 2 (10b) for habitat conservation was based on practicability; these areas conserve EFH while minimizing costs. Alternative 2 is the most feasible alternative, and continues to minimize impacts on EFH. Alternative 2 will prevent all mobile bottom tending gears from fishing in the habitat closed areas. In contrast, the habitat areas identified in Alternative 1 only affect scallop gear. By modifying the habitat closed areas in this framework action, the overall habitat strategy for the Northeast region will be more effective and consistent in terms of protecting a variety of benthic habitats from all mobile bottom tending gears. Furthermore, if Alternative 3 is selected, only access alternative 3 is consistent with those boundaries, and if Alternative 1 is selected, then only access alternative 1 can be selected.

In terms of Alternative 3, which would combine the two habitat areas proposed in both Amendments, the Council determined that this alternative is not feasible either because bottom trawling could eventually resume in portions of the Groundfish mortality closed areas when Groundfish stocks recover. At that time, there would be no benefit to habitat to keep an area closed to one fishery that uses mobile bottom tending gears and open to another one that does as well. Therefore, consistent habitat closed areas between management plans is essential for effective habitat protection.

6.2.3.3 Impacts of Management Measures on Endangered and Other Protected Species

The proposed habitat closed areas, or making them consistent with other Council management actions, do little to affect sea turtles in a significant manner because their low level of abundance and the lack of information on fine scale distribution in the northern portions of their range. Therefore, there is no basis on which to compare the habitat closure area alternatives.

6.2.3.4 Economic Impacts

The economic impacts of the habitat conservation alternatives are examined in connection with the access boundary alternatives in Table 82. Although habitat closures, in general, have negative impacts on landings and revenues of vessels, access to the Georges Bank groundfish areas with the proposed boundary alternative (alternative 4) is estimated to have positive impacts on economic benefits relative to the status quo, and will also be consistent with the EFH requirements. The impacts on the gross profits of the small businesses in the scallop fishery will also be positive. Since the habitat closure alternatives are related to the access boundary alternatives, the economic analyses provided in Section 6.1.4 and in Table 82 are also valid for the habitat alternatives as discussed below.

Access alternative 1 is consistent with the status quo habitat closure, which corresponds to the Framework adjustment 13 scallop closed area access program and consistent with the habitat closures proposed in Amendment 10 rotation. Access alternative 2 and the proposed alternative 4 are consistent with alternative 10b, the closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP. Access alternative 3 is consistent, however, both with the closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP and Amendment 10 to the Sea Scallop FMP. The tables in Table 82 show the economic benefits of these options for both Amendment 10 rotation and Framework 16 rotation schedule.

Status quo habitat closures (or access alternative 1) are estimated to result in slightly higher landings compared to the habitat closure alternative 3, or access alternative 3, by at most 1 million lbs. a year on average during the 2004-2007 period. The differences in the fleet revenues, and the producer

benefits (surplus) for these options are negligible because the scallop prices are expected to be somewhat higher for habitat alternative 3. Consumer benefits (surplus) for the status quo habitat alternative is greater in comparison to the habitat alternative 3 (access alternative 3) due to higher landings and lower prices with this option. As a result, the cumulative value of the total economic benefits for the status quo habitat alternative, as measured by the sum of consumer and producer surpluses, will exceed the benefits for habitat alternative 3 (Access alternative 3) by about \$10 million during 2004 to 2007 (Table 82).

The economic impacts of the habitat closures with alternative 10b and corresponding to the access alternatives 2 and 4 (proposed option) are almost identical to each other and close to the results for status quo habitat closures specified in access alternative 1. Differences in landings, revenues and economic benefits for these options are small, even though the closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP, and corresponding to access alternatives 2 and 4 result in slightly higher economic benefits. Habitat alternative 3 (Access alternative 3) results in smallest benefits among all options (Table 82). The relative long-term impacts of these alternatives are similar to their short-term impacts (Table 83).

6.2.3.5 Social Impacts

Since the economic analysis (see section above) indicates that differences between the alternatives are relatively negligible in both the short and long term, it is expected that differences in any social impacts that are derivative from economic changes would also be negligible. However, not all social impacts are derivative of economic changes, and not all social impacts respond in the same direction as economic ones. For example, habitat closures can negatively impact those fishermen who tend to fish in those areas, who may be highly dependent on them if not necessarily heavily fishing; such social impacts may include safety risks, increased time away from home with attendant impacts on family and community, and income loss. Nonetheless, it does not appear that the additional closures proposed for the Nantucket Lightship area or Cashes Ledge will additionally impact the industry negatively given that little fishing has recently occurred there (see Amendment 10, Section 8.8.4). Positive impacts may occur from the long-term benefits to the industry from biomass changes that habitat closures are hoped to engender.

6.2.4 Gear Restrictions (Section 4.2.3)

There are two types of gear restrictions that Framework 16/39 proposes. One alternative would prohibit the use of scallop trawls in the controlled access areas. Another alternative would require vessels to hang twine top mesh in the dredge, matching the mesh and rings with a 1:1 ratio. Both alternatives are intended to minimize bycatch. A status quo alternative is included which would allow fishing by vessels using scallop dredges or trawls.

- Alternative 1 would allow scallop fishing by limited access vessels using trawls and dredges and is described in Section 4.2.4.1
- Alternative 2 would allow scallop fishing by limited access vessels using dredges only and is described in Section 4.2.4.2
- Alternative 3 would require vessels to hang twine tops with a 1:1 ratio when fishing in the Nantucket Lightship Area and is described in Section 4.2.4.3

6.2.4.1 Biological Impacts

Allowing fishing with scallop trawls is unlikely to have any significant biological impact on the scallop resource. Scallop trawls allow fishermen to target smaller scallops that are more mobile and often

swim, or “clap”, with the approach of fishing gear. While they cannot outswim a vessel, smaller swimming scallops have a better chance of escapement around the sides and top of the gear, or through the meshes. Vessels use trawls to counter the escapement of smaller scallops, because they have larger footprints and rise higher than a dredge.

Since the majority of scallops in the proposed access areas are large, trawls are unlikely to provide the same benefit to fishermen that use them. Besides, the TAC will prevent the removals from exceeding the mortality goals, unless fishermen selectively target smaller scallops – an unlikely outcome given the high abundance of more valuable large scallops in the access areas.

On the other hand, scallop trawls are basically modified flatfish nets (ones used to catch flounders and shrimp using various size meshes). Although the mesh size is regulated and can be no smaller than ones required on groundfish vessels, the Council believes that using scallop trawls in the groundfish closed areas would increase finfish bycatch, particularly for flounders like yellowtail flounder, American plaice, and winter flounder. In addition, cod and haddock may be more vulnerable to scallop trawls than scallop dredges.

In general, scallop trawls are not used to target scallops in Georges Bank areas, because the nets are less durable when used on harder ocean bottom. There are parts of Georges Bank, particularly in Closed Area II, that have sandy bottom like that generally found in the Mid-Atlantic where scallop trawls are generally used. Given the high abundance and biomass of yellowtail flounder in the southern part of Closed Area II, allowing scallop trawls in the proposed access areas could increase bycatch and bycatch mortality to unacceptable levels.

No analysis has become available to assess the effects of requiring a 1:1 twine top hanging ratio for vessels fishing for scallops in the Nantucket Lightship Area.

6.2.4.2 Habitat Impacts

There are a number of factors that will affect the speed and degree of habitat recovery in areas where bottom tending mobile gear use is reduced. These include: 1) the degree, duration, and extent of fishing in the area; 2) any other anthropogenic sources of habitat disturbance (e.g., contamination of bottom sediments in coastal waters); 3) the natural disturbance regime (e.g., frequency and intensity of storms, bottom currents, etc.); 4) the type of substrate or sediment; 5) depth; 6) the type of benthic organisms that inhabit the area; and 7) the length of time that the area remains undisturbed by fishing. Improvements in habitat quality would most likely occur in areas where trawling and dredging activity was minimal to begin with and is totally eliminated, or substantially reduced; in deeper, low-energy locations not exposed to storm events or strong bottom currents; in hard-bottom areas (in shallow or deep water) that support prolific growth of large, attached epifauna, or in other bottom habitat types that provide food and cover for demersal fish; and in areas populated by benthic organisms that grow faster and reproduce quickly. For some benthic environments that have been altered by fishing activity, complete recovery could take years. For others, recovery might only take a few months. If reductions in bottom trawling activity in marginal areas are temporary and increase after a year or two as stock abundance increases, habitat recovery in certain areas may never be complete.

A useful conceptual model for understanding the relationship between changes in fishing effort and the degree of habitat modification described in the National Research Council report on trawling and dredging effects (NRC 2002). Starting from zero fishing effort with no habitat impact, a change in fishing effort will change the degree of habitat modification, but as effort continues to increase habitat alteration reaches its maximum point and levels off even as effort continues to increase. For heavily

modified habitats exposed to high levels of fishing activity, effort must be reduced substantially before any improvement in habitat quality is realized. Although there is much uncertainty regarding the relationship between fishing effort and habitat alteration at low effort levels, it is probably not linear as depicted in NRC 2002. A more realistic relationship, at least for certain habitats exposed to mobile bottom-tending gear, is curvilinear since the first few tows in an undisturbed habitat would be expected to produce the greatest relative change in habitat conditions (e.g. three-dimensional structure), with reduced effects as fishing effort increases to the point of maximum habitat modification. In this scenario, reductions in effort would have to be even more severe (approaching zero effort) in order to achieve, say, a 50% habitat recovery. The model describes a situation in which the disturbance caused by each subsequent pass of gear is reduced by 50%.

In summary, studies show that trawling and dredging both have high habitat impacts (NREFHSC 2002, NRC 2002 and Morgan and Chuenpagdee 2003). (See Amendment 10 Gear Effects Evaluation for more detail.) In so far as the distribution of trawl gear use in the access program is more frequent and intense, the impacts of trawl gears, as documented in the NREFHSC 2002 report, are greater to benthic habitats than dredges. The likelihood of trading all trawl DAS for dredge DAS will affect the habitat analysis of this alternative. That is to say that the habitat impacts could be lower than the No Action if the utilization rate of dredge DAS is higher. However, it is important to note that, whether using a dredge or a trawl, the first pass of a dredge over an undisturbed area is expected to have more significant effects than subsequent passes.

Requiring trawl-authorized vessels to use dredges in the Georges Bank controlled access areas, while potentially reducing finfish bycatch, could have a negative impact on habitat by forcing vessels to use dredges. While both gears have impacts on bottom habitat, it is generally believed that scallop dredges cause more adverse habitat impacts than do scallop trawls. Some vessels that customarily use scallop trawls may be forced to switch to using scallop dredges, if they cannot trade trips to be allocated in this framework adjustment for Hudson Canyon Area trips where scallop trawling is allowed.

Changes to the way that fishermen install ('hang') the twine top when fishing in the Nantucket Lightship Area, there are no reasonably foreseeable habitat impacts.

6.2.4.3 Impacts of Management Measures on Endangered and Other Protected Species

Access to the Georges Bank areas by vessels using either trawl or dredge gear will have no direct impact on sea turtles. Dredges have been used historically in the access areas when they were previously open to scallop fishing with no documented takes of turtles, again likely because they are not common in these areas.

There are documented takes of turtles in trawl gear used in other fisheries, but to date no takes have occurred in scallop trawl gear. However, because trawl vessels would be compelled to fish in the controlled access areas in order to use their full DAS allocation, there could be an incentive for Mid-Atlantic trawl vessels that are not able to switch to dredge gear to trade trips with vessels fishing in the Georges Bank areas, thereby increasing effort in the Hudson Canyon Area.

Trawl vessels that are capable of switching to dredge gear to fish in the Georges Bank areas could increase effort off New England, but with fewer negative impacts to protected species because sea turtles do not occur there in any significant numbers. If trawl vessels simply did not utilize their Georges Bank access area allocations, scallop effort for this sector would decrease as would the potential risks to sea turtles in the Mid-Atlantic.

While there appears to be no direct impact on sea turtles, the modified twine top configuration proposed could have a potential indirect effect in that it could serve to reduce bycatch sufficiently in the Georges Bank areas to extend the access timeframe. In turn, a longer period of access in areas where turtles are less abundant could reduce scallop fishing effort in areas with higher concentrations of animals and possibly reduce sea turtle interactions overall in the scallop fishery. The existing twine top without the hanging ratio described has no impact on sea turtles.

6.2.4.4 Economic Impacts

Prohibiting trawls from accessing groundfish areas are expected to have negative economic impacts on the scallop trawl vessels, but positive impacts on the scallop fishing industry and the dredge sector. This is because fishing by trawls may result in a larger catch of yellowtail flounder and the closure of the access areas to scallop fishing if the finfish TACs are exceeded. Such a premature closure would prevent achieving optimum scallop catch and net economic benefits from the scallop resource.

There were 16 vessels with full-time scallop trawl permits during the years 2001-2003. The number of part-time trawl permits declined from 18 in 2001 to 8 in 2003, and occasional trawl permits from 15 in 2001 to 8 in 2003 (Table in IRFA Section). Therefore, a total of 32 trawl vessels would be affected by this gear change provision. Many scallop trawls vessels, however, fish mostly in Mid-Atlantic areas, and do not fish in the New England controlled access areas (Table 100). Out of 22 active part-time trawl vessels only 8 (36% of all) accessed Georges Bank groundfish areas, whereas none of the 11 part-time scallop trawls fished in those areas. Therefore, the negative impacts of this requirement to use dredge in Georges Bank (GB) groundfish areas would be minimized if these vessels could trade their Georges Bank controlled access trips for Hudson Canyon area trips, where they are allowed to fish with scallop trawls.

For part-time trawls vessels it could be harder to find part-time dredge vessels to trade their Georges Bank access trips with because of the small number of vessels in this category and because of the proposed measure, which restricts exchange to vessels within the same, permit category. On the other hand, Amendment 10 provisions provide flexibility to part-time and occasional vessels for fishing in the controlled access, and allows them to choose which access area to fish up to the maximum number of trips allocated to each vessels. Since part-time vessels will be allocated only 3 controlled access trips in 2004 and 2 trips in 2005 including the Hudson Canyon access area, the part-time trawls may be able to use these trips in Mid-Atlantic without the necessity to change gear.

Table 100. Controlled area access by scallop trawls during 1999-2002 fishing years.

Permit Category	Data	Fished both in Georges Bank and Mid-Atlantic access areas	Fished only in Mid-Atlantic access areas	Did not fish in any controlled access area	Total of Vessels
Full-time limited access scallop trawl	Number of vessels	8	11	3	22
	DAS-used in Mid-Atlantic controlled areas as a % of total DAS-used	9.29%	4.92%	0%	5.84%
	DAS-used in Georges Bank controlled areas as a % of total DAS-used	8.91%	0%	0%	3.24%
Part-time limited access scallop trawl	Number of vessels	0	5	6	11
	DAS-used in Mid-Atlantic controlled areas as a % of total DAS-used	0%	20.39%	0%	9.27%
	DAS-used in Georges Bank controlled areas as a % of total DAS-used	0%	0%	0%	0%

There were eight occasional trawl permits according to the 2003 permit data, and of these, 6 occasional trawl vessels were active in the scallop fishery during 1999-2002. None of these vessels accessed either the Georges Bank or Mid-Atlantic controlled access areas, therefore, were not included in Table 100. These vessels are less likely to be affected with the requirement to use dredges in Georges Bank groundfish areas compared to their part-time and full-time counterparts, however. This is because occasional vessels will be allocated only one controlled access area trip during 2004-2007, and they can take this trip in any access area including Hudson Canyon, where they are allowed to fish with scallop trawls. As discussed in Section 6.2.10.4, however, these vessels will need to have a VMS onboard in order to fish in any access area.

Another choice for scallop trawl vessels that were unable to find other vessels to trade their Georges Bank access trips with, is to switch to using dredges to fish in the GB groundfish areas. A vessel will choose such gear adjustments, however, if the potential revenues from the access areas outweigh the costs of switching to dredges. The costs of such gear change could not be estimated, however, within any reasonable range. Because change of gear from trawl to dredge is application specific, there is no suitable range of cost estimates for converting a trawl to a dredge for a vessel that never used dredge before.

For vessels that could not trade their Georges Bank groundfish areas trips for Hudson Canyon trips, or could not switch to using dredges, the change in this gear requirement will mean a significant decrease in their revenues. The number of trips allocated to the full-time vessels for the Georges Bank groundfish areas vary between 3 to 4 trips in 2004, 1 to 2 trips in 2005 depending on the rotation alternative (see Sections 4.2.11 and 6.2.11.4). At a scallop price of \$4.00 per pound, the revenues from each trip to these areas amount to \$72,000 at a possession limit of 18,000 lb. per trip. Therefore, not being able to take even one access trip to Georges Bank groundfish areas will reduce revenues significantly. Revenue loss could amount to \$216,000 to \$288,800 for 2004 for a full-time scallop vessel depending on the access and rotation alternative and on the number of trips that could not be exchanged with other vessels.

Vessels with general category scallop permit that fish in the closed areas must also comply with these regulations, but the total width of the dredge may not exceed 10.5 feet (3.2 m). General category vessels must have no more than one dredge onboard during a closed area trip. The impact of this requirement was discussed in Section 6.2.13.4.

6.2.4.5 Social Impacts

The prohibition in the preferred alternative on the use of scallop trawl would negatively affect those vessels that primarily use trawl. However, there were only 16 full-time vessels that were authorized to use scallop trawls in 2003 out of 339 total limited access vessels, and they are located in the Mid-Atlantic (with 4 homeported in Norfolk VA, 2 in Newport News VA, 1 in Hampton VA, 1 in Richmond VA, 4 in Cape May NJ, and 4 in New Bern NC). Therefore, their primary location away from the access areas reduces the likelihood that the vessels would fish in the Georges Bank areas with trawls, even if they were allowed to do so.

More importantly, the provision to trade closed areas DAS for more local areas provides a means to lessen negative impacts from the area-specific allocations and was analyzed in Section 8.8.3 in Amendment 10. The one-for-one exchanges of controlled access trips were intended for just this type of situation, where vessels that are unable to fish in specific areas (either by regulation, distance, or conditions) would have the opportunity to exchange trips for more favorable fishing areas. Hence the social impacts of being unable to fish with trawls in the proposed access areas are negligible.

6.2.5 Groundfish Catch Limits (Section 4.2.5)

Section 4.5 includes two hard TAC alternatives, one that terminates access to one or more access areas if the yellowtail flounder bycatch reaches 10% of the US TAC and another that has the same limit, but allows vessels to transfer unused trip allocations to open fishing areas. There are three options to prorate the amount of unused controlled access effort that may be transferred to the open fishing areas. A fourth option would allow any unused controlled access effort to be transferred, which may exceed the amount of effort that is associated with No Action. The effects on the scallop resource and the amount of fishing effort in the open areas with this fourth unlimited option have not been analyzed.

A third alternative would set aside one percent of the yellowtail flounder controlled access TAC for researches to be compensated using fishing trips in the proposed access areas. A fourth alternative is a process for distributing information in real time to fishermen, to help them take voluntary steps to avoid excessive bycatch. A fifth alternative would rely on the reduced bottom contact time in the controlled access areas and other measures to minimize bycatch without a hard TAC.

- Alternative 1 is a hard yellowtail flounder TAC that would not allow unused trips to be re-deployed elsewhere. This alternative is described in Section 4.2.5.1.
- Alternative 2 is a hard yellowtail flounder TAC that would allow unused trips to be taken in open scallop fishing areas. This alternative is described in Section 4.2.5.2.
- Alternative 3 would set aside 1 percent of the 10 percent yellowtail flounder TAC for research, and is described in Section 4.2.5.3
- Alternative 4 describes in Section 4.2.5.4 a set of procedures that would require action by NMFS to collect and disseminate real-time information for vessels to avoid high bycatch areas
- Alternative 5 would allow controlled access with no finfish TACs. This alternative is described in Section 4.2.5.5.

6.2.5.1 Biological Impacts

Bycatch for species observed in scallop catches in Closed Area I, Closed Area II, and the Nantucket Lightship Area during the 2000 fishing year were summarized and projected for the 2004-2007 fishing year (by the methods described in Section 6.2.11.1.2). These catches were observed by the sea

sampling program, funded through a TAC set-aside and achieved sampling frequencies exceeding 25%. The projections and adjustments took into account projected changes in finfish and scallop biomass, in the TACs for all the alternatives under consideration, and changes in gear.

Finfish that the fleet caught most frequently included monkfish (aka goosefish), yellowtail flounder, witch flounder, barndoor skate, and other skates (a mix of big, little, and clearnose). Forward projections indicated that the only regulated species that the projected catches exceeds the 10% TAC is yellowtail flounder. The projected catches, as a percent of the US TAC are shown in the tables below for Southern New England and Georges Bank yellowtail flounder, respectively.

Projected catches for all other species were not expected to exceed 10% of the US TAC for any rotation or access boundary alternative, for any year. Some species do not have a TAC (e.g. Georges Bank winter flounder and Atlantic halibut), have a TAC that is considerably larger than the estimated bycatch (e.g. monkfish), or landings are prohibited (barndoor skate). For species with no TAC, the projected bycatch is low. For monkfish, the highest bycatch estimate (570 mt) is considerably less than the northern stock TAC (~16,000 mt) and the catches are expected to be within limits set by the Monkfish FMP. Although the discards by weight are higher than other species that are a component of bycatch, the barndoor skate catch in numbers is low and comprise a very small fraction of the standing population due to their large individual size. It is also important to note that the barndoor skate biomass has seen substantial recovery in the past five years, despite the scallop area access programs in 1999 and 2000.

The major concern about the expected bycatch is yellowtail flounder, because it is vulnerable to scallop fishing gear, it has significant overlap with the distribution of scallops in the access areas, and for one stock is overfished. In addition to regulations the presently govern scallop fishing and the access program itself, a hard TAC will keep the bycatch below acceptable limits and prevent the catches from affecting the groundfish benefits and rebuilding potential. When catches meet the 10% US TAC limit, access to the areas that overlap a groundfish stock will close to scallop fishing for the remainder of the scallop fishing year. The following analysis describes the estimated bycatches as if there were no bycatch TAC and the scallop fleet landed the entire scallop TACs for each alternative.

6.2.5.1.1 Bycatch projections

6.2.5.1.1.1 *Southern New England yellowtail flounder*

The projected catches of Southern New England yellowtail flounder exceed 10% of the Multispecies FMP TACs in only 2004, the amount depending on the scallop fishing mortality target and TACs associated with the rotation alternatives.

For the Amendment 10 mechanical rotation order, the Nantucket Lightship Area would open to scallop fishing with a 0.4 scallop mortality target and yellowtail flounder bycatch would be almost double the 10% limit (see table below). Exactly how much of the scallop TAC could be landed before the yellowtail flounder bycatch reaches its TAC is hard to determine, due to seasonal fluctuations in catches and uncertainty (see Section 6.2.5.1.1.5). These estimates however indicate that it is improbable that the Nantucket Lightship Area would remain open long enough to take the scallop TAC with trip allocations that are consistent with an $F=0.4$ mortality target.

Without a hard TAC, the catches could have a more significant impact on rebuilding prospects and future groundfish benefits. With this rotation order, there no scallop fishing would be scheduled for the Nantucket Lightship Area during 2005-2007 and yellowtail flounder bycatch would likewise be nil.

Under the alternative mechanical rotation strategy in this framework adjustment, the scallop mortality target is $F=0.2$, or about 50% of the amount of fishing effort. Assuming that yellowtail flounder bycatch is proportional to the scallop TAC, then the projected bycatch is slightly more than the 10 % limit in 2004. A hard TAC might still be needed to keep the bycatch below the 10% threshold if the actual bycatch rates are higher than projected, but the scallop landings might be achieved without exceeding this threshold by spreading the access and landings out, allowing more time for yellowtail flounder to rebuild before catching scallops in later years.

In 2005, Nantucket Lightship Area would not be open for scallop fishing and yellowtail flounder bycatch would therefore be nil. In 2006 and 2007, the alternative Framework 16 rotation strategy would re-open the Nantucket Lightship Area with a scallop mortality target of $F=0.2$. Since the biomass of Southern New England yellowtail flounder is expected to grow faster than scallop biomass, the projected bycatch is expected to be between 6 and 10%. Again, there would be some benefit for a hard TAC that prevents the bycatch from exceeding the 10% threshold, but the scallop fishery is expected to catch the entire scallop TAC. **Caveat:** The Amendment 13 projections for yellowtail flounder are very optimistic, expecting a 10-fold increase in spawning stock biomass between 2004 and 2007. If the Southern New England yellowtail flounder stock does not grow as much as expected, these estimates would be optimistic, and vice versa.

Table 101. Projected bycatch estimates by alternative, as a percent of the US TAC for Southern New England yellowtail flounder.

Year	Mechanical rotation alternative (Section 4.2.11)	Access boundary alternative (Section 4.2.2)			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
2004	Amendment 10	18.3%	19.0%	18.3%	19.0%
	Framework 16	10.0%	10.4%	10.0%	10.4%
2005	Amendment 10	0.0%	0.0%	0.0%	0.0%
	Framework 16	0.0%	0.0%	0.0%	0.0%
2006	Amendment 10	0.0%	0.0%	0.0%	0.0%
	Framework 16	8.9%	9.3%	8.9%	9.3%
2007	Amendment 10	0.0%	0.0%	0.0%	0.0%
	Framework 16	6.0%	6.2%	6.0%	6.2%

6.2.5.1.1.2 Georges Bank yellowtail flounder

As for Southern New England yellowtail flounder, the projected bycatch estimates depend on the scallop fishing mortality target and TACs associated with the rotation alternatives. Yellowtail flounder bycatch rates (per pound of scallop meats), were nearly an order of magnitude higher in Closed Area II than they were in Closed Area I, during the 2000 access program. As a result, the expected bycatch depends on order of rotation, and when Closed Area II would be open for scallop fishing.

With the status quo Amendment 10 rotation order, Closed Area II would remain closed to fishing until 2005 and only Closed Area I would open with a 0.4 scallop mortality target in 2004. Thus yellowtail flounder bycatch would be low. After 2004, the yellowtail flounder bycatch without a hard TAC having an effect is projected to be 17 to 18% in 2005 when Closed Area II would be open, declining to 13 to 15% in 2006 and 2007 from the effect of changes in scallop biomass on fishing time to take the

scallop TAC. While Georges Bank yellowtail flounder are not overfished, as for Southern New England yellowtail flounder; a hard TAC at 10% of the US TAC would prevent the scallop bycatch from affecting the expected groundfish benefits. Moreover, it could also prevent the US from being required to take action under the US/Canada sharing agreement to close DAS fisheries.

With the alternative rotation strategy in Framework Adjustment 16, the projected yellowtail flounder bycatch (see table below) is higher in 2004 than for the Amendment 10 rotation strategy, around 16% of the US TAC⁵⁶. This is because Closed Area II would open earlier than Amendment 10 anticipated, and closed later in 2006. In all cases, however, the projected yellowtail flounder bycatch estimate is higher than 10% whenever Closed Area II would be open for controlled access fishing. Thus, if the yellowtail flounder bycatch is the amount predicted, the access program could close when 70-80% of the scallop trips had been taken. Without a hard yellowtail flounder TAC, the fishery may catch more than the 10% limit and have a greater impact on the benefits of groundfish management.

Table 102. Projected bycatch estimates by alternative, as a percent of the US TAC for Georges Bank yellowtail flounder.

Year	Mechanical rotation alternative (Section 4.2.11)	Access boundary alternative (Section 4.2.2)			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
2004	Amendment 10	0.7%	0.8%	0.3%	0.8%
	Framework 16	16.0%	16.2%	16.0%	16.0%
2005	Amendment 10	17.7%	18.0%	17.7%	17.7%
	Framework 16	15.2%	15.5%	14.9%	15.2%
2006	Amendment 10	15.6%	15.9%	15.6%	15.6%
	Framework 16	0.4%	0.5%	0.2%	0.5%
2007	Amendment 10	13.3%	13.5%	13.3%	13.3%
	Framework 16	13.5%	13.7%	13.5%	13.5%

6.2.5.1.1.3 Other finfish comparisons

The projected bycatch for 15 other species or species groups for the eight access alternatives (four boundary alternatives coupled with two rotation alternatives) are presented in Table 103 to Table 110. Since the bycatch projections depend on the finfish catch rate per pound of scallop landings in 2000, adjusted for projected changes in scallop and finfish biomass, the effects of larger ring size, and the scallop TACs under various access and rotation alternatives, the results for other species follow the same pattern as discussed for yellowtail flounder above. Except for access alternative 3, there are little differences between access alternatives because the scallop TACs are similar. The scallop TAC for Closed Area I and access alternative 3 are 1/3rd of other alternatives, so the projected bycatch is lower for species that were observed in the Closed Area I bycatch during the 2000 access program.

⁵⁶ The TMGC has estimated the US share of the Georges Bank yellowtail flounder TAC as 6,000 mt in 2004. While this limit has not been estimated for 2005-2007, the Amendment 13 projections do not estimate a change in spawning stock biomass over the period and if accurate, the US share of the TAC would be about the same, subject to changes in allocations. For the purposes of this analysis, it is assumed that the US TAC for Georges Bank yellowtail flounder would remain at 6,000 mt until modified or re-estimated.

In no case, however, do the projected bycatch estimates exceed 10% of the US TACs for regulated multispecies. One important caveat is that the projections are derived from the 2000 access trip data, which were restricted to the Framework 13 areas (Section 4.2.2.3) and seasons (Section 4.2.7.1). The more deviations from these restrictions that apply, the more that actual catches are likely to deviate (increase or decrease) from these projections.

As for yellowtail flounder above, the projected bycatch of species observed in the 2000 scallop access fishery tend to be higher in 2004 for the Amendment 10 rotation (Table 103) because the fishing mortality targets for Closed Area I and the Nantucket Lightship Area are 0.2, rather than 0.4. This includes Georges Bank and Southern New England winter flounder. On the other hand, species that were more frequently observed in the bycatch in Closed Area II are higher for the alternative Framework 16 rotation strategy in 2004 (Table 104). This includes monkfish (aka goosefish), witch flounder, barndoor skate, and other skates.

In 2005 (Table 105 and Table 106), the projected finfish bycatch estimates are similar for the two rotation alternatives, except for Georges Bank winter flounder. The Framework 16 rotation alternative would allow access to Closed Area I during 2005, which experienced a higher catch of Georges Bank winter flounder than in other areas.

The projected bycatch in 2006 and 2007 (Table 107 to Table 110) for the various access and rotation alternatives show similar patterns as those described above, depending on which areas would be open for controlled access and the scallop TAC that would apply. The bycatch rates by area that were observed in the 2000 scallop controlled access fishery are discussed below.

Table 103. Projected bycatch estimates (mt) by species for 2004 with the existing mechanical rotation alternative in Amendment 10.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	337	354	216	354		
GB Yellowtail Fldr.	44	47	17	47	6000	600
SNE Yellowtail Fldr.	129	134	129	134	707	71
GB Winter Fldr.	74	78	28	78		
SNE Winter Fldr.	22	23	22	23	2860	286
Summer Fldr.	3	3	2	3		
Atl. Halibut	0	0	0	0		
Am. Plaice	8	8	4	8	3695	370
Witch Fldr.	19	20	8	20	5174	517
Windowpane Fldr.	16	17	9	17		
Red Hake	9	10	9	10		
Silver Hake	3	3	3	3		
Haddock	0	0	0	0	24885	2489
Cod	1	1	1	1	3949	395
Barndoor Skate	63	65	62	65		
Thorny Skate	6	6	5	6		
Other Skate	799	835	609	835		

Key

> 5% TAC
>10% TAC

Table 104. Projected bycatch estimates (mt) by species for 2004 with the alternative mechanical rotation alternative in Framework Adjustment 16/39.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	559	570	559	562		
GB Yellowtail Fldr.	958	974	958	958	6000	600
SNE Yellowtail Fldr.	71	74	71	74	707	71
GB Winter Fldr.	9	9	9	9		
SNE Winter Fldr.	12	12	12	12	2860	286
Summer Fldr.	5	5	5	5		
Atl. Halibut	0	0	0	0		
Am. Plaice	22	23	22	22	3695	370
Witch Fldr.	116	118	116	116	5174	517
Windowpane Fldr.	10	11	10	11		
Red Hake	14	14	14	14		
Silver Hake	14	14	14	14		
Haddock	0	0	0	0	24885	2489
Cod	1	1	1	1	3949	395
Barndoor Skate	98	100	98	99		
Thorny Skate	12	12	12	12		
Other Skate	1526	1558	1526	1537		

Table 105. Projected bycatch estimates (mt) by species for 2005 with the existing mechanical rotation alternative in Amendment 10.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	534	543	534	534		
GB Yellowtail Fldr.	1064	1082	1064	1064	6000	600
SNE Yellowtail Fldr.	0	0	0	0	1982	198
GB Winter Fldr.	9	10	9	9		
SNE Winter Fldr.	0	0	0	0	3550	355
Summer Fldr.	4	5	4	4		
Atl. Halibut	0	0	0	0		
Am. Plaice	25	25	25	25	3625	363
Witch Fldr.	147	149	147	147	6992	699
Windowpane Fldr.	8	8	8	8		
Red Hake	10	10	10	10		
Silver Hake	14	14	14	14		
Haddock	0	0	0	0	27692	2769
Cod	1	1	1	1	4830	483
Barndoor Skate	71	72	71	71		
Thorny Skate	11	11	11	11		
Other Skate	1394	1418	1394	1394		

Table 106. Projected bycatch estimates by species (mt) for 2005 with the alternative mechanical rotation alternative in Framework Adjustment 16/39

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	576	591	494	583		
GB Yellowtail Fldr.	911	927	892	912	6000	600
SNE Yellowtail Fldr.	0	0	0	0	1982	198
GB Winter Fldr.	58	61	27	61		
SNE Winter Fldr.	0	0	0	0	3550	355
Summer Fldr.	5	5	4	5		
Atl. Halibut	0	0	0	0		
Am. Plaice	25	25	22	25	3625	363
Witch Fldr.	136	138	127	136	6992	699
Windowpane Fldr.	14	15	10	14		
Red Hake	9	9	9	9		
Silver Hake	12	12	11	12		
Haddock	0	0	0	0	27692	2769
Cod	1	1	1	1	4830	483
Barndoor Skate	59	60	59	59		
Thorny Skate	10	10	9	10		
Other Skate	1364	1396	1235	1376		

Table 107. Projected bycatch estimates (mt) by species for 2006 with the existing mechanical rotation alternative in Amendment 10.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	462	470	462	462		
GB Yellowtail Fldr.	937	953	937	937	6000	600
SNE Yellowtail Fldr.	0	0	0	0	3325	333
GB Winter Fldr.	8	8	8	8		
SNE Winter Fldr.	0	0	0	0	4445	445
Summer Fldr.	4	4	4	4		
Atl. Halibut	0	0	0	0		
Am. Plaice	24	25	24	24	3015	302
Witch Fldr.	131	133	131	131	7667	767
Windowpane Fldr.	7	7	7	7		
Red Hake	9	9	9	9		
Silver Hake	12	12	12	12		
Haddock	0	0	0	0	31866	3187
Cod	1	1	1	1	6361	636
Barndoor Skate	61	62	61	61		
Thorny Skate	9	9	9	9		
Other Skate	1205	1226	1205	1205		

Table 108. Projected bycatch estimates (mt) by species for 2006 with the alternative mechanical rotation alternative in Framework Adjustment 16/39

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	182	191	112	191		
GB Yellowtail Fldr.	26	28	10	28	6000	600
SNE Yellowtail Fldr.	297	308	297	308	3325	333
GB Winter Fldr.	43	45	17	45		
SNE Winter Fldr.	16	17	16	17	4445	445
Summer Fldr.	2	2	1	2		
Atl. Halibut	0	0	0	0		
Am. Plaice	5	6	3	6	3015	302
Witch Fldr.	13	14	6	14	7667	767
Windowpane Fldr.	9	9	5	9		
Red Hake	5	5	4	5		
Silver Hake	2	2	1	2		
Haddock	0	0	0	0	31866	3187
Cod	1	1	1	1	6361	636
Barndoor Skate	30	31	30	31		
Thorny Skate	3	3	2	3		
Other Skate	416	436	306	436		

Table 109. Projected bycatch estimates (mt) by species for 2007 with the existing mechanical rotation alternative in Amendment 10.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	389	396	389	389		
GB Yellowtail Fldr.	795	809	795	795	6000	600
SNE Yellowtail Fldr.	0	0	0	0	6118	612
GB Winter Fldr.	7	7	7	7		
SNE Winter Fldr.	0	0	0	0	5194	519
Summer Fldr.	3	3	3	3		
Atl. Halibut	0	0	0	0		
Am. Plaice	23	24	23	23	3441	344
Witch Fldr.	106	108	106	106	7435	744
Windowpane Fldr.	6	6	6	6		
Red Hake	7	7	7	7		
Silver Hake	10	10	10	10		
Haddock	0	0	0	0	37563	3756
Cod	1	1	1	1	7717	772
Barndoor Skate	52	53	52	52		
Thorny Skate	8	8	8	8		
Other Skate	1016	1034	1016	1016		

Table 110. Projected bycatch estimates (mt) by species for 2007 with the alternative mechanical rotation alternative in Framework Adjustment 16/39.

Access	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Groundfish TAC (mt)	10.0%
Species						
Goosefish	454	463	454	456		
GB Yellowtail Fldr.	811	825	811	811	6000	600
SNE Yellowtail Fldr.	364	378	364	378	6118	612
GB Winter Fldr.	7	7	7	7		
SNE Winter Fldr.	17	17	17	17	5194	519
Summer Fldr.	4	4	4	4		
Atl. Halibut	0	0	0	0		
Am. Plaice	25	25	25	25	3441	344
Witch Fldr.	109	111	109	109	7435	744
Windowpane Fldr.	8	9	8	8		
Red Hake	11	11	11	11		
Silver Hake	11	11	11	11		
Haddock	0	0	0	0	37563	3756
Cod	1	1	1	1	7717	772
Barndoor Skate	78	80	78	79		
Thorny Skate	9	10	9	9		
Other Skate	1234	1259	1234	1242		

6.2.5.1.1.4 Groundfish bycatch observations and projections

Estimates of total groundfish bycatch in the 2000 scallop controlled access fishery are shown in Table 111 to Table 113, by groundfish closed area. Within Closed Area I, which was open for scallop fishing during October 1 to January 31, most of the bycatch consisted of other skates, monkfish, Georges Bank winter flounder, and yellowtail flounder. Divided by scallop landings, the average catch per pound of scallop meats is shown in column 3 of Table 111, totaling 0.37 lbs. of bycatch for each pound of scallop meats landed, or 0.04 lbs. when converted to live scallop weight.

Finfish bycatch in Closed Area II, which was open for controlled access scallop fishing from June 15 to August 14, was considerably higher than in Closed Area I, particularly for yellowtail flounder and barndoor skate. Bycatch in weight was predominately other skates, yellowtail flounder, monkfish, barndoor skate, and witch flounder (Table 112). The average catch per pound of scallop meats landed totaled 1.19 lbs. of bycatch for each pound of scallop meats landed, or 0.14 lbs. when converted to live scallop weight.

Finfish bycatch in the Nantucket Lightship Area (Table 113), which was open for controlled access scallop fishing from August 15 to September 30, was very low. The average catch per pound of scallop meats landed totaled only 0.15 lbs. of bycatch for each pound of scallop meats landed, or 0.02 lbs. when converted to live scallop weight. The bycatch in weight consisted mainly of monkfish, barndoor skate, yellowtail flounder, and Southern New England/Mid-Atlantic winter flounder.

The average catches in each area were adjusted when data were available to account for changes in spawning stock biomass between 2000 and each year of proposed access. The projected change in finfish spawning stock biomass from 2000 to 2004 is shown in column 4 of Table 111 to Table 113. During this time, the scallop biomass is projected to increase by 24% in Closed Area I, by 81% in Closed Area II (due to the large year class of small scallops observed during the 2000 survey), and by 21% in the Nantucket Lightship Area. Finfish species without biomass projections were assumed to show no changes in exploitable biomass or catch per unit effort.

Adjustments for differences in the bycatch using 3½” rings and 4” rings were found to be significant for many species and were also applied, using the equation below. This formula gave the expected bycatch per pound of scallop meats landed in 2004, which when multiplied by the TACs for each area and access alternative, gave the expected finfish bycatch.

Equation 1

$$C_{Year} = \frac{C_{2000}/S_{2000} * \Delta B_{groundfish} * R_{adj}}{\Delta B_{scallop}} * TAC_{scallop}$$

Where:

C_{2000}/S_{2000} = bycatch of a species per pound of scallop landed during the 2000 controlled access fishery

$\Delta B_{groundfish}$ = projected change in spawning stock biomass (a proxy for exploitable biomass of sizes vulnerable to capture by dredges) between the 2000 fishing year and the proposed year of access

$\Delta B_{scallop}$ = projected change in scallop biomass between the the 2000 fishing year and the proposed year of access

R_{adj} = ratio of observed catch in 160 paired tows comparing 3½” and 4” rings within the Georges Bank closed areas, by species
TAC_{scallop} = Total allowable catch of scallop in each area for a particular access alternative.

Projected groundfish catch rate for a future year equals the observed groundfish catch per pound of scallop, multiplied by the projected change in groundfish biomass ($\Delta B_{groundfish}$; compared with 2000 groundfish biomass) and the estimated change in bycatch due to the ring size change (R_{adj}), divided by the change in scallop biomass ($\Delta B_{scallop}$; compared with 2000 scallop biomass). The change in scallop biomass is a divisor, because fishing time per pound of scallop decreases in proportion with the increase in scallop biomass. This projected groundfish catch rate is then multiplied by the scallop TAC (expecting that all of the TAC will be landed) to project the groundfish catch in total weight (C_{year}).

6.2.5.1.1.5 Seasonality and Uncertainty

These projections use data collected during the previous access program for the Georges Bank closed areas, occurring in the 2000 fishing year⁵⁷. As such, there are a number of factors about the data that should be taken into account and cautiously interpret the results.

Observers were randomly placed on limited access scallop vessels taking trips to Closed Area I, Closed Area II, and the Nantucket Lightship Area during the 2000 fishing year. All trips had a 10,000 lb. scallop possession limit and were charged 10 DAS, unless the trip lasted longer and actual DAS were charged against the vessel’s annual allocation. Secondly, the scallop vessels had an option of using DAS for controlled access trips that vessels had been allocated or fishing the DAS in open fishing areas that had no possession limit or DAS tradeoff. This factor may have influenced the type of vessels and fishermen that took controlled access trips.

Under the area management provisions in Amendment 10, vessels will not have the option of fishing controlled access DAS in open areas, a change that may influence the type of vessels and fishermen taking trips into the proposed access areas. Fishermen from Mid-Atlantic ports would be more likely to take trips to the access areas than they had been in the past. At face value, changes in fleet composition fishing in the controlled access areas doesn’t appear to affect bycatch composition, which is more influenced by types of gear, fishing location, and fishing behavior. On the other hand, fishermen from various regions have different ways of rigging dredges and/or different ways of handling the fishing gear. These factors may influence the amount of actual bycatch in the proposed controlled access program.

The southern part of Closed Area II (south of 41°30’ N latitude) was open for controlled access scallop fishing during June 15 to August 14, 2000. Seventy-eight (78) of the 160 trips by 80 vessels were observed by the Sea Sampling Observer Program (SSOP) personnel. The northeast corner of the Nantucket Lightship Area was open during August 15 to September 30 and 51 of 136 total trips were sampled. A central part of Closed Area I was open during October 1 to January 31 and 107 of 135 total trips were sampled. The access areas during the 2000 fishing year were described in Framework Adjustment 13 and are also considered in this action in Section 4.2.2.3.

Since the controlled access trips were subsampled, the bycatch estimates have sampling error. This uncertainty was estimated and summarized in Section 6.2.5.1.1.5. In most cases, the bycatch estimates had a CV of less than 30% and were thus relatively well estimated. Nonetheless, this

⁵⁷ 1999 data for Closed Area II access were not used because bycatch data were collected mainly for catches of yellowtail flounder and catches of many other species were not recorded.

uncertainty should be taken into account when making inferences using the bycatch estimates and projections using these data.

In addition, the bycatch estimates were based on data that were collected during the specific seasons indicated above. Either year-around openings or simultaneous openings during a June 15 to January 31 season would allow access to the areas during seasons when they were not open before. Obviously, year-round access deviates the most from the seasons when SSOP collected the bycatch data and the projections are probably not valid due to seasonal changes in spawning activity. Some alternatives also change the boundaries of the access areas, particularly within Closed Area I and the Nantucket Lightship Area. Scallop fishing in areas that were not open during the 2000 fishing year may experience different catch rates for both scallops and finfish.

The bycatch projections in this analysis are best matched to alternatives that mimic the conditions that existed during the 2000 access program. One basic assumption, however, is that the estimated bycatch ratios (i.e. finfish weight discarded by species per pound of scallop meats retained) were constant throughout the season. Seasonal changes in availability of species to the fishery and changes in catchability to the gear were not estimated, because it would have required unavailable data.

The bycatch projections therefore give a relatively good indication of total catch, especially if the access areas remain open during the same seasons, the areas experience the same types of fishing activities, and both the scallop and groundfish stock biomass projections are accurate. The bycatch projection estimates are useful for comparing the relative amounts of bycatch for various management strategies and whether the amount is likely to exceed the 10% TAC for yellowtail flounder, prematurely closing the access areas. These projections are unreliable, for making inferences about how long areas may remain open before reaching a bycatch TAC or the amount of scallop TAC that would be landed before a closure. With a low Southern New England yellowtail flounder TAC in 2004, opening on June 15, rather than August 15 for example, bycatch in the Nantucket Lightship Area could close the fishery after only a few trips had been taken. Alternatively, the yellowtail flounder bycatch could be low like the fishery experienced in 2000 and the area access would remain open throughout the season.

Table 111. Observed finfish bycatch in Closed Area I during the 2000 fishing year, with estimated bycatch per scallop lbs. meat weight in 2004.

Species	2000 bycatch (mt)	2000 catch per pound of scallop		Projected 2000-2004 groundfish	Projected 2000-2004 scallop	Ring adjustment	2004 catch
		meats		biomass growth	biomass growth		per pound of scallop
Goosefish	172.49	0.114		1.000	1.24	1.031	0.092
Yellowtail Fldr.	23.80	0.016		1.630	1.24	0.946	0.021
Winter Fldr.	64.69	0.043		1.000	1.24	0.590	0.035
Summer Fldr.	1.53	0.001		1.000	1.24	0.361	0.001
Atl. Halibut	0.06	0.000		1.000	1.24	1.000	0.000
Am. Plaice	5.10	0.003		1.075	1.24	1.179	0.003
Witch Fldr.	4.29	0.003		3.690	1.24	1.107	0.008
Windowpane Fldr.	9.33	0.006		0.990	1.24	1.000	0.005
Red Hake	0.98	0.001		1.000	1.24	0.604	0.001
Silver Hake	0.63	0.000		1.000	1.24	0.683	0.000
Haddock	0.06	0.000		2.200	1.24	0.705	0.000
Cod	1.02	0.001		0.820	1.24	1.000	0.000
Barndoor Skate	0.61	0.000		1.000	1.24	0.897	0.000
Thorny Skate	1.69	0.001		1.000	1.24	0.897	0.001
Other Skate	271.34	0.180		1.000	1.24	0.897	0.145

Table 112. Observed finfish bycatch in Closed Area II during the 2000 fishing year, with estimated bycatch per scallop lbs. meat weight in 2004.

Species	2000 bycatch (mt)	2000 catch per pound of scallop meats	Projected 2000-2004 groundfish biomass growth	Projected 2000-2004 scallop biomass growth	Ring adjustment	2004 catch per pound of scallop meats
Goosefish	174.76	0.229	1.000	1.81	1.031	0.127
Yellowtail Fldr.	212.97	0.279	1.630	1.81	0.946	0.251
Winter Fldr.	3.09	0.004	1.000	1.81	0.590	0.002
Summer Fldr.	1.46	0.002	1.000	1.81	0.361	0.001
Atl. Halibut	0.06	0.000	1.000	1.81	1.000	0.000
Am. Plaice	7.23	0.009	1.075	1.81	1.179	0.006
Witch Fldr.	11.31	0.015	3.690	1.81	1.107	0.030
Windowpane Fldr.	2.72	0.004	0.990	1.81	1.000	0.002
Red Hake	3.30	0.004	1.000	1.81	0.604	0.002
Silver Hake	4.42	0.006	1.000	1.81	0.683	0.003
Haddock	0.01	0.000	2.200	1.81	0.705	0.000
Cod	0.16	0.000	0.820	1.81	1.000	0.000
Barndoor Skate	23.23	0.030	1.000	1.81	0.897	0.017
Thorny Skate	3.45	0.005	1.000	1.81	0.897	0.003
Other Skate	456.18	0.598	1.000	1.81	0.897	0.330

Table 113. Observed finfish bycatch in the Nantucket Lightship Area during the 2000 fishing year, with estimated bycatch per scallop lbs. meat weight in 2004.

Species	2000 bycatch (mt)	2000 catch per pound of scallop meats	Projected 2000-2004 groundfish biomass growth	Projected 2000-2004 scallop biomass growth	Ring adjustment	2004 catch per pound of scallop meats
Goosefish	16.12	0.028	1.000	1.21	1.031	0.023
Yellowtail Fldr.	5.76	0.010	2.580	1.21	0.946	0.021
Winter Fldr.	2.20	0.004	1.140	1.21	0.590	0.004
Summer Fldr.	0.16	0.000	1.000	1.21	0.361	0.000
Atl. Halibut	0.00	0.000	1.000	1.21	1.000	0.000
Am. Plaice	0.19	0.000	1.075	1.21	1.179	0.000
Witch Fldr.	0.04	0.000	3.690	1.21	1.107	0.000
Windowpane Fldr.	0.63	0.001	0.990	1.21	1.000	0.001
Red Hake	0.95	0.002	1.000	1.21	0.604	0.001
Silver Hake	0.28	0.000	1.000	1.21	0.683	0.000
Haddock	0.00	0.000	2.200	1.21	0.705	0.000
Cod	0.04	0.000	0.820	1.21	1.000	0.000
Barndoor Skate	7.10	0.012	1.000	1.21	0.897	0.010
Thorny Skate	0.43	0.001	1.000	1.21	0.897	0.001
Other Skate	56.21	0.096	1.000	1.21	0.897	0.080

6.2.5.1.1.6 Ring size groundfish catch adjustment (Radj):

Bycatch analysis for paired tow studies using dredges outfitted with 3½” and 4” rings were provided by Dr. DuPaul of the Virginia Institute of Marine Science. The table below presents a summary of average ratios of groundfish weight to retained scallop ratios, unweighted and weighted by the number of tows. Among-cruise standard deviations for weight per retained scallop are shown as well. Among cruise standard deviation is probably more appropriate because tows on individual cruises are clustered by area and season.

All 160 of Dr. DuPaul’s tows are included in the summary, but these can be broken out by management area. There is no a priori reason why the ratios would vary by area, except due to differences in finfish size frequency.

6.2.5.1.2 Scallops

Groundfish TACs have the potential for early closure of a controlled access area if and when bycatch reaches a pre-defined limit. As a result, this may cause additional effort to be forced back into the open fishing areas if vessels are allowed to transfer unused trips. The effect is to reduce biomass and yield in the open areas below the amount estimated in Amendment 10 assuming full access to the groundfish closed areas. It is impossible to predict when the areas might close due to a groundfish TAC or how many unused trips might be used in the open areas, but some projections indicate that as much as half of the controlled access trips might be transferred.

Limits on the transfer of trips could keep the open area scallop mortality below the amounts estimated without access to the Georges Bank groundfish closed areas. Under this scenario, however, the Amendment 10 projections predict future reductions in stock biomass, yield, and catch per unit effort. This was a major concern during the development of Amendment 10, which led the Council to modify the framework adjustment process to ensure the plan achieved optimum yield, regardless of whether access occurs or not.

With limits on transfers of unused trips from controlled access areas to open areas (Options 1 to 3), the amount of removals from the open areas is not expected to exceed the amount that would be taken with the default Amendment 10 DAS allocations if there is no access. This was analyzed in Amendment 10 and updated in the No Action projections for this document.

Without such limits on the amount of trips and fishing effort that could be transferred to the open areas, scallop mortality in the open areas could be higher than what has been estimated in this analysis. How much it exceeds the No Action scallop mortality, depends on the number of controlled access trips allocated (which depends on the rotation schedule and area access boundaries) and when the areas would close from the bycatch meeting the yellowtail flounder TAC. In the extreme, the maximum allocation in 2004 is four trips, or 48 DAS. If the access program closes after only a few trips had been taken by the fleet, then many full-time vessels could have 90 DAS (48+42) to fish in the open areas, rather than 62 DAS with No Action.

In any case, the full compliment of unused controlled access DAS allocations could not transfer to the open areas without exceeding the fishing mortality goals of the FMP. The DAS used is based on the fishing mortality goal and the expected catch per DAS in areas open to fishing. In addition to this, the controlled access DAS allocations are inflated to account for DAS not actually fished (i.e. a controlled access trip would take 8 days to capture 18,000 lbs. of scallop, instead of the 12 DAS that will be allocated and charged for each controlled access trip).

6.2.5.1.3 Groundfish

The Groundfish PDT advised that groundfish bycatch by the scallop fishery from the closed areas of less than ten percent of the US TAC (hard or target) on regulated multispecies would be consistent with Amendment 13 to the Northeast Multispecies FMP. Since the access programs will result in a combination of effort shifts to the groundfish closed areas and a large reduction in scallop dredge bottom contact per DAS, ensuring the controlled access bycatch will be at or below the 10 percent threshold is in keeping with this recommendation. Catches of over ten percent from the closed areas, however, would increase the possibility that the access programs would impact rebuilding programs, since there will be

some additional bycatch (albeit reduced compared to previous years) that results from scallop fishing outside the closed areas.

December 1 was recommended as the date for the earliest adjustment in the Georges Bank yellowtail flounder, considering the seasonality of recent landings and the timing of proposed special access programs that would target yellowtail flounder. The yellowtail flounder TAC is specified on a groundfish fishing year calendar, and over the past four years, 62% of the landings have occurred in six months, from December to May (see table below). By the beginning of December, only 37% of yellowtail flounder landings for the year have occurred, but this quickly rises in December as vessels begin targeting yellowtail flounder in the winter months. Special access programs to target yellowtail flounder are being considered for June to December, so coupled with the historic landings patterns, the Regional Administrator in December would be able to reasonably estimate whether the US TAC will be taken and how much yellowtail flounder catch would remain uncaught without the adjustment.

Table 115. Cumulative landings (percent) of Georges Bank yellowtail flounder. (Source: NMFS preliminary landings statistics.)

Month	Groundfish Fishing Year				Grand Total
	1999	2000	2001	2002	
May	8%	9%	16%	20%	13%
Jun	11%	14%	28%	28%	20%
Jul	13%	16%	32%	30%	23%
Aug	14%	18%	38%	32%	25%
Sep	15%	19%	39%	33%	26%
Oct	16%	21%	44%	35%	29%
Nov	19%	37%	51%	39%	37%
Dec	43%	52%	60%	45%	51%
Jan	53%	67%	69%	55%	62%
Feb	59%	74%	76%	68%	70%
Mar	78%	89%	89%	81%	85%
Apr	100%	100%	100%	100%	100%

6.2.5.1.3.1 *Georges Bank Yellowtail Flounder*

The Amendment 13 fishing mortality target for GB yellowtail flounder is the F_{MSY} proxy (F40%), or a fully-recruited mortality of 0.25. The primary management measures proposed in Amendment 13 (DAS controls and gear modifications) are expected to result in a fishing mortality of $F=0.09$, much lower than the target fishing mortality. This means there is considerable room for catches of yellowtail flounder in addition to those that result from groundfish vessels fishing on Category A DAS under the measures proposed in Amendment 13. In order to provide opportunities to harvest additional GB yellowtail flounder, Amendment 13 proposes a Special Access Program (SAP) that will allow groundfish vessels to fish in CAII to target yellowtail flounder. The SAP defines trip limits and restrictions on the number of trips so the catch of yellowtail can be closely monitored, and provides NOAA Fisheries the ability to adjust the number of trips to control the catch. Amendment 13 also implements a US/CA Resource Sharing Understanding that establishes a hard TAC for GB yellowtail flounder. All catches of yellowtail flounder are applied to this TAC, and overages are deducted from the following year's TAC.

The proposed total TAC (landings and discards) for GB yellowtail flounder in 2004 is 6,000 mt. This action proposes to limit scallop dredge vessels fishing in CA II to ten percent of the total TAC, or

600 mt (landings and discards). Since both the total removals and the scallop dredge removals are hard TACs, if adequately monitored and enforced the proposed action should not increase fishing mortality above the Amendment 13 proposed target. Additional evidence that this action will not compromise groundfish management is suggested by recent catches in this fishery (Table 116). Total US catch peaked in 2001 at 4,300 mt, which included 461 mt of scallop dredge discards. Catch declined to 3,000 mt in 2002 with the imposition of additional groundfish regulations. Preliminary landings statistics for 2003 are only available through August, but show landings are about the same level as in 2002. Amendment 13 proposes even further reductions in groundfish fishing effort that are likely to reduce GB yellowtail catches by groundfish vessels. These data suggest that absent the CAII SAP, GB yellowtail flounder catches in 2004 are unlikely to exceed 4,000 mt and could be as low or lower than 3,000 mt. If the Amendment 13 SAP is approved, catches by groundfish vessels are expected to increase. Analysis in Amendment 13 suggests that if all 320 authorized trips are taken, the yellowtail catch for those trips is expected to be 5,000 mt. It is not clear if this will represent additional catches of yellowtail flounder compared to previous years, or will include some trips that are shifted from other trips outside the area. One possible impact of the scallop access program - or scallop vessel bycatch outside of the access program - is that it could require a reduction in the number of trips available for groundfish vessels to use in the CAII access program. This is an allocation issue rather than a biological concern as long as TACs are adequately monitored.

Table 116. Recent U.S. GB yellowtail flounder catches (thousands of mt.)

Landed	1.6	0.3	0.8	1.0	1.8	2.0	3.7	3.8	2.5
Discard	0.2	<0.1	<0.1	<0.1	0.1	0.4	0.3	0.5	0.5
Total	1.8	0.3	0.8	1.0	1.9	2.4	4.0	4.3	3.0

Recent information on landings and discards show that the proposed TAC for the CAII and CAI scallop dredge access programs level – ten percent of the US TAC, or 600 mt (1.3 million lbs.) – is consistent with the recent catches of yellowtail flounder, both in terms of actual amount and as a percentage of removals by gear. Scallop dredge discards of GB yellowtail flounder were not estimated prior to 1994. The NMFS commercial fisheries database was examined to compare scallop dredge landings to total landings from 1983-1993. These data were reported by ten-minute square, and then assigned to stock areas based on the location of the mid-point of each ten-minute square. Since the majority of landings were by otter trawls, Table 117 also reports the percentage of landings from that gear. For this time frame, scallop dredge landings exceeded ten percent of landings in 1989, 1990, 1991, and 1993. In 1990 and 1993, landings did not exceed 11 percent of total landings. Over the entire period, dredges landed 3.9 percent of the yellowtail flounder, but averaged 6.4 percent annually. In terms of lbs., the highest landings were 667,342 lbs. (302 mt) in 1990. These landings occurred not just as a result of groundfish taken incidental to scallop fishing, but as a result of directed fishing on yellowtail by scallop vessels.

Table 117. GB yellowtail flounder landings by gear, 1983-1993 (percentages do not add to 100 percent because other gears are not shown)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
TRAWL,	99.6%	99.1%	99.1%	98.0%	97.5%	93.3%	83.6%	88.5%	85.9%	93.2%	87.1%
DREDGE, SCALLOP	0.2%	0.9%	0.6%	1.8%	2.5%	6.7%	16.3%	10.9%	13.7%	6.3%	11.0%
Pounds landed (dredge)	45,130	112,155	33,723	118,728	151,187	275,387	410,430	667,342	550,914	396,171	510,296

Dredge landings declined considerably in 1994 as a result of a restrictive trip limit imposed by Northeast Multispecies Amendment 5 and the imposition of the closed areas as year round closures.

Estimates of scallop dredge discards from VTR reports are available beginning in 1994. Landings have been dominated by gillnet and trawl vessels since 1994, with the landings by all other gears amounting to one percent or less of the total landings. Because of the low level of landings by other gears, scallop dredge discards were compared to total U.S. landings for this period. From 1994 through 1998, scallop dredge discards were at a relatively low level in terms of pounds and as a percentage of total catch. Discard estimates increase in 1999 to 395 mt and have since stayed near that level. As a percentage of the total U.S. catch, discards peaked at 16 percent in 1999, declined to 8 percent in 2000, and then increased to 11 percent in 2001 and 15 percent in 2002. The average over this period was 7 percent. 484 mt of discards in 1999 are the highest estimated. (Table 118)

Table 118. GB Yellowtail Flounder discards and total catch (mt), 1994 – 2002

Year	Dredge	Catch	Discards/ Catch
1994	33	1800	2%
1995	16	300	5%
1996	28	800	4%
1997	18	1000	2%
1998	23	1900	1%
1999	395	2400	16%
2000	301	4000	8%
2001	461	4300	11%
2002	446	3000	15%

To summarize, landings or discards of yellowtail flounder exceeded 10 percent of the landings or catch for this stock during seven of the twenty years examined. The proposed TAC of 600 mt is higher than the reported scallop dredge landings in any year from 1983 through 1993, and is higher than the estimated dredge discards in any year from 1994 through 2002.

6.2.5.1.3.2 *Southern New England/MA Yellowtail Flounder*

The rebuilding fishing mortality rate for SNE/MA yellowtail flounder adopted by Amendment 13 is $F=0.37$ for 2004 and 2005, and then a reduction to $F=0.26$ for 2006 through 2008. The management measures in Amendment 13 are estimated to achieve these fishing mortality rates – unlike the situation for GB yellowtail flounder, where the primary measures (not including the CAII SAP) are expected to reduce mortality below the level adopted by the Amendment.

To determine if exceeding the target TAC for the stock by 10 percent – the proposed scallop dredge bycatch TAC for the access program – will threaten rebuilding programs, short-term projections were run under two scenarios. The first scenario corresponds to the Amendment 10 rotation scheme and assumes that the target TAC plus 10 percent is caught in 2004. The second scenario corresponds to the alternate rotation scheme and assumes the target TAC plus 10 percent is caught in both 2004 and 2006. Results of those projections are shown in Table 119 compared to the rebuilding projections included in Amendment 13. These results suggest that under either schedule of access for the NLSA, the growth in SSB if the program results in the target TAC being exceeded by ten percent is virtually indistinguishable from the rebuilding trajectory adopted by Amendment 13.

Table 119. Short-term projection results under different NLSA access program schedules. See text for description.

Year	SSB (median)			Expected F (median)		
	A13	A10 Rotation	Alternate Rotation	A13	A10 Rotation	Alternate Rotation
2004	5,387	5,345	5,335	0.37	0.57	0.41
2005	12,088	11,980	11,883	0.37	0.37	0.37
2006	25,602	25,423	25,575	0.26	0.26	0.29
2007	37,486	38,048	39,473	0.26	0.26	0.26

Landings and discards of SNE/MA yellowtail flounder were examined to determine if the proposed TAC is consistent with recent experience. Analyses were performed in the same manner as for GB yellowtail flounder. For the period 1983 through 1993, the NMFS commercial landings database was used to determine the percentage of landings of this stock by scallop dredges. Landings were assigned to stock area as described above. Dredge landings exceeded 10 percent of the total landings in 1988, 1989, 1992, and 1993. The annual average for the period was 7.5 percent. Dredge landings were 781,175 lbs. in 1990. Landings were less than the proposed 2004 TAC (70.7 mt, or 155,870 lbs.) only in 1984, but exceeded the proposed 2006 TAC only in 1989 and 1990. It should be noted these landings occurred not just as a result of groundfish taken incidental to scallop fishing, but as a result of directed fishing on yellowtail by scallop vessels.

Table 120. SNE/MA yellowtail flounder landings by gear, 1983-1993 (percentages do not add to 100 percent because other gears are not shown)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
TRAWL, OTTER,	99.1%	99.0%	98.5%	96.5%	91.8%	89.4%	86.0%	95.5%	92.7%	85.5%	81.0%
DREDGE, SCALLOP	0.9%	0.9%	1.4%	3.4%	8.0%	10.3%	13.9%	4.3%	7.1%	14.2%	18.4%
Pounds landed (dredge)	331,154	175,655	90,941	261,536	306,072	214,575	882,258	781,175	643,800	549,108	258,841

Scallop dredge discards of yellowtail flounder were examined for the 1994 through 2001 period (as with GB yellowtail flounder, landings of SNE/MA yellowtail flounder by trawl and gillnet vessels accounted for 99 percent of landings during this period). Dredge discards exceeded 10 percent of the catch in 1994, 1995, and 1998. The average for the period was 9 percent. Discards peaked at 142 mt in 1994 for the entire area. Discards from the SNE area peaked in 1999 at 102 mt.

Table 121. SNE/MA yellowtail flounder discards and total catch (mt), 1994 – 2001

Year	Dredge, SNE only	Dredge, SNE/MA	Catch	Discards/ Catch
1994	36	142	600	24%
1995	34	38	300	13%
1996	39	44	500	9%
1997	7	12	800	2%
1998	78	87	700	12%
1999	102	107	1300	8%
2000	16	20	1000	2%
2001	21	45	1100	4%

In summary, the 10 percent TAC for the NLSA may constrain the scallop fishery compared to recent catches, particularly in 2004. It is, however, consistent with the average discards or landings for the period 1983 through 2001.

6.2.5.1.4 Other species

Other species with a notable bycatch in the 2000 controlled access fishery were monkfish, barndoor skate, and other skates. Measures are in place for the monkfish and skate FMPs to achieve plan goals, including a monkfish possession limit while on a scallop DAS.

6.2.5.2 Habitat Impacts

Fishing by bottom tending mobile gears, including the gears used in the scallop fishery, has been restricted in the groundfish closed areas since 1994 or 2000 depending on the area (See Amendment 10 for distribution of scallop fishing effort in the FW 13 access areas). Assuming that fishing effort in the access program will be similar under both hard TAC alternatives, the habitat impacts inside access areas will be comparable. However, options regarding transfers of unused access DAS could have differential habitat impacts outside the access program areas (open areas). The extent of the habitat impacts is difficult to assess among the various transfer options. However, in general, there will be more bottom contact time by scallop gear outside of these areas than if transfer was not an option. The habitat impacts of this increased bottom time will depend on substrate type and the amount and type of other fishing activities in these areas (e.g. bottom trawling).

The alternative to set-aside one percent of the yellowtail flounder TAC for conducting research could indirectly benefit habitat when habitat research is funded and provides better information for future management decisions.

Alternatives to enhance voluntary efforts to avoid bycatch could have a negative impact on habitat in the controlled access areas, however. By avoiding the bycatch, the access fishery could be extended which will increase bottom contact time. The potential exists for shifting effort off of sandy bottoms where the yellowtail are found and into the more vulnerable gravel bottom habitats. Overall impacts on EFH could be minimized by this measure, because the total bottom contact time for trips in the access areas is much less than in open areas. About 50% of the scallop fishing effort in the Georges Bank region is in the Great South Channel that also has complex habitat and would see a reduction in fishing effort from the lower open area DAS allocation.

As compared to the other bycatch TAC options, the alternative with no bycatch TACs would have the greatest habitat impact because this approach would cause the access fishery to last longer than necessary, having a continued impact on habitat in the controlled access areas.

6.2.5.3 Impacts of Management Measures on Endangered and Other Protected Species

The four options presented for transferring unused controlled access trips to the open areas could have varying impacts on sea turtles. Under any of these options, scallop vessels may fish unused controlled access DAS in open fishing areas and may elect to use some of the DAS in the Mid-Atlantic region. Three of the four options (Sections 4.2.5.2.2 to 4.2.5.2.4) include limits on the amount of fishing effort that may be transferred from controlled access areas (when they close due to the yellowtail flounder bycatch) to open areas. Under any of these options, the timing of a potential closure for yellowtail flounder bycatch reaching the 10% TAC limit is important, as is the location of the transferred effort.

However, under three of the four options (Sections 4.2.5.2.2 to 4.2.5.2.4), the impacts are unlikely to be any greater than those associated with the default DAS allocations in Amendment 10. The impacts of Amendment 10 were determined to affect, but not jeopardize threatened and endangered species (including sea turtles), in the February 23, 2004 Biological Opinion prepared by NMFS.

The proposed Georges Bank closed area access program is unlikely to start before September 2004, thus any closures and potential transfers of fishing effort to the Mid-Atlantic region are unlikely to occur until very late in the fishing year, if they happen at all. If the yellowtail flounder bycatch reaches the 10% TAC limit, it is more likely than not to happen in 2004 after most turtles have vacated the scallop fishing areas in the Mid-Atlantic region. During 2005 and 2006, unused allocations from the Georges Bank area could be later used by vessels in the Mid-Atlantic where and possibly when turtles are seasonally more abundant and therefore more susceptible to encounters with scallop gear, as compared to New England waters. However, it is also possible that scallop vessels may use such effort during the December through February when the risk of sea turtle entanglement is far less than in the spring through fall when sea turtles are seasonally present in Mid-Atlantic waters north of NC. Research has shown that by December of each year, loggerhead, Kemp's ridley, and green sea turtles have typically moved from more northern waters to waters offshore of NC, and waters further south where the influence of the Gulf Stream provides temperatures favorable to sea turtles (31°C) (Epperly et al. 1995c; Epperly et al. 1995a; Epperly et al. 1995b).

It is not possible to predict how much fishing effort might actually shift south to the Mid-Atlantic. Market conditions, fishermen's behavior, weather and a host of other factors exist that make such predictions nearly impossible. Further, despite potential impacts associated with scallop DAS from the area access allocations being used later in open fishing areas, this effort will not exceed the default open area allocations analyzed in Amendment 10 to the Scallop FMP. Therefore, while allowing the transfer of unused DAS from the area access allocations would lessen the expected benefit to sea turtles as a result of the shift in effort to the access areas, allowing the transfer of the unused DAS to open areas does not mean that Framework 16/39 will adversely affect sea turtles since, overall, effort in the Mid-Atlantic is expected to be reduced as a result of the proposed action.

The yellowtail flounder bycatch set-aside would ensure that certain research activities will receive funding. While they clearly do not relate directly to the protection of endangered, threatened or other protected species, these provisions could facilitate the accumulation of better information about any protected species interactions in the scallop fishery. Research is currently underway through the set-aside to explore gear modifications that could reduce interactions with sea turtles.

6.2.5.4 Economic Impacts

The economic impacts of finfish TACs and procedures to help avoid bycatch:

The economic impacts of the TACs depend on when and/or if these TACs would be exceeded, and on alternative fishing opportunities available to vessels if a specific access area is closed due to TACs. Biological impacts analysis includes bycatch projection estimates for scallop fishing, and shows relative amounts of bycatch for various management strategies and whether the amount is likely to exceed the 10% TAC for yellowtail flounder (see Section 6.2.5.1.1). Based on these projections, however, it is not possible to estimate how long areas may remain open before reaching a bycatch TAC or the amount of scallop TAC that would be landed before a closure. Because of these uncertainties, this section provides only a qualitative discussion of the economic impacts of the hard TACs for yellowtail bycatch.

Because exploitable scallop biomass is larger in Georges Bank groundfish areas, fishing in those areas are less costly in terms of trip expenses per pound of scallops, thus more profitable for both vessel owner and the crew. As a result, if the yellowtail TACs is exceeded before the scallop landings reach the scallop TACs and the access areas are closed, the landings, revenues and economic benefits could fall below the levels estimated in Table 57 to Table 63, Table 82, and Table 83 corresponding to the options of this Framework action. On the other hand, without a hard TAC, the finfish catches could have a negative impact on rebuilding prospects and future groundfish benefits, jeopardizing the opportunities of scallop vessels to access these areas in the future. Therefore, this measure will have indirect economic benefits on the scallop industry.

The economic impacts of finfish TACs will be less if access is provided according to the rotation schedule proposed by Framework 16, instead of Amendment 10 rotation for the following reasons:

- According to Framework 16 rotation schedule, the Nantucket Lightship Area would be open to scallop fishing with a 0.2 scallop mortality target in 2004, and during 2006-2007. These fishing mortality rates would translate into one trip per full-time vessel in each of these years. According to the biological impact analysis, the projected yellowtail flounder bycatch in the Nantucket Lightship Area is just slightly more than the 10% limit in 2004 at this mortality target (F=0.2). As a result, the risk of an area closure due to high bycatch is lower with the rotation schedule proposed by Framework 16.

Table 122. Framework 16 Rotation – Estimated Scallop Revenue from Georges Bank groundfish areas

Year	Access areas	Estimated scallop revenue as a % of total scallop revenue			
		Access Boundary Alternative 1	Access Boundary Alternative 2	Access Boundary Alternative 3	Access Boundary Alternative 4
2004	CAII	14.52%	14.57%	15.29%	14.33%
	NLS	12.86%	13.17%	13.53%	13.17%
	Total	27.38%	27.74%	28.82%	27.50%
2005	CAI	5.88%	6.19%	2.27%	6.21%
	CAII	14.74%	14.94%	14.74%	14.74%
	Total	20.61%	21.13%	17.00%	20.94%
2006	CAI	5.20%	5.47%	2.01%	5.49%
	NLS	12.72%	13.17%	12.72%	13.21%
	Total	17.91%	18.65%	14.72%	18.70%
2007	CAII	12.03%	12.21%	12.03%	12.03%
	NLS	9.54%	9.89%	9.54%	9.91%
	Total	21.57%	22.10%	21.57%	21.94%

- The biological impact analysis shows that because the Nantucket Lightship Area would be open to scallop fishing with a 0.4 scallop mortality target if the Amendment 10 mechanical rotation was implemented, yellowtail flounder bycatch would be almost double the 10% limit. These estimates indicate that it is improbable that the Nantucket Lightship Area would remain open long enough to take the scallop TAC with trip allocations that are consistent with an F=0.4 mortality target. Therefore, the economic benefits from access will likely to be less than estimated in **Table 57** and **Table 59** with Amendment 10 rotation.

Table 123. Amendment 10 Rotation – Estimated Scallop Revenue from Georges Bank groundfish areas

Year	Access areas	Estimated scallop revenue as a % of total scallop revenue			
		Access Boundary Alternative 1	Access Boundary Alternative 2	Access Boundary Alternative 3	Access Boundary Alternative 4
2004	CAII	8.48%	8.89%	3.27%	8.96%
	NLS	24.49%	25.24%	24.49%	25.44%
	Total	32.97%	34.13%	27.76%	34.40%
2005	CAII	17.21%	17.40%	17.83%	17.21%
2006	CAII	15.34%	15.48%	15.84%	15.34%
2007	CAII	10.73%	10.86%	10.73%	10.73%

- Because limited access vessels were allocated only one trip to the Nantucket Lightship Area with the Framework 16 rotation, annual scallop revenue from these trips is estimated to be less than 15% of the total scallop revenue in years 2004 and during 2006-2007 (Table 122). With the Amendment 10 rotation, however, more trips will be allocated to NLS area and the percentage of scallop revenue from this area will exceed 24% in 2004 (Table 123). The revenues from Georges Bank groundfish areas are estimated to be 27.50% of the total scallop revenues with Framework 16 rotation, and about 34.50% with Amendment 10 rotation. Therefore, any premature closure would subject vessels to larger losses under Amendment 10 rotation schedule.

Impacts of transfer of DAS to open areas

To mitigate the loss of revenues and total benefits from a potential closure of the access areas, the vessels will be allowed to use DAS allocations in other areas. This option may prevent the reduction in fleet revenues and total economic benefits in the first couple of years if NLS (and other areas) are closed due to reaching hard TACs.

According to the proposed option, in case of a premature closing of any of the Georges Bank groundfish areas, the vessels will have the option to fish in the open areas (not including other controlled access areas in Georges Bank and Hudson Canyon) up to 20 DAS with the proposed option in 2004 and more in the future years (Table 122):

- Since in the open areas, LPUE is estimated to be slightly higher than 1,800 per DAS, it will be possible for a full-time vessel to land the possession limit of 18,000 lb. from open areas in about 10 DAS, for each trip not taken to Georges Bank groundfish areas due to a closure. In other words, under an early closure scenario, the proposed option will allow vessels to recover up to 2 controlled access trip revenues from open area trips in 2004. With Amendment 10 rotation schedule, however, the possibility of revenue loss will be greater because there will be 3 trips allocated to the Nantucket Lightship area, an area with a relatively high potential for bycatch.
- Even with DAS transfer, the net revenues from open area trips will be lower than the net revenues from controlled access trips. This is because trip expenses per pound of scallops for fishing in the in open areas will be higher compared to the more productive Georges Bank groundfish areas.
- Table 124 shows the total number closed area trips that could be transferred to the open areas in case of an early closure and generating equivalent gross revenue from the later areas. Because open area DAS allocations will be higher after 2004, there will be an opportunity to transfer more access trips to open areas in case the Georges Bank groundfish areas are closed early because of the hard TACs (Table 124).

Table 124. Estimated LPUE in the open areas, and estimated number of controlled access trips that could be recovered from the open areas

Year	LPUE in the open areas	Maximum amount of unused DAS to be transferred to open areas (full-time vessels)	Total amount of scallop landings with DAS transfer (lb.)	The number of controlled access trips that could be transferred to open areas
2004	1870	20	37,400	2.1
2005	1847	77	142,219	7.9
2006	1428	85	121,380	6.7

The provision for DAS transfer will also reduce derby-style fishing and reduction in prices and revenues due to heavy fishing in a compressed time frame. The proposed option for DAS transfer is more restrictive than the alternative DAS transfer options because it allows using DAS allocations only in open areas, not including the HC area. The other 3 options for DAS transfer that were considered but not proposed by the Council provide more opportunity and flexibility to the vessels regarding transfer of DAS. Option 2 would make it possible to recover a larger proportion of revenue loss from any controlled access trips not taken, but would be very complicated to administer. Options 3 and 4 would probably make it possible for vessels to land the same amount of scallops from the open areas, if not more, compared to estimated landings from controlled access trips that could not be taken due to the closures of these areas. However, the trip and DAS allocations with these options may exceed the no-access allocations in Amendment 10, therefore, the landings, revenues and economic benefits could be different than analyzed in Table 57 to Table 63, **Table 82**, and **Table 83**. The short- and long-term economic impacts of these options could not be analyzed, however, because it was not possible to project with certainty the consequences for the scallop biomass and yield corresponding to these options.

In addition to the DAS transfer option, provision to increase the yellowtail TAC (if a specified limit is not harvested by December 1 of each year) will provide more flexibility and have positive impacts on the scallop landings and revenues than otherwise possible by extending the season for scallop fishing under the right circumstances.

Impacts of yellowtail flounder by-catch set-aside for research:

This measure could have indirect benefits for the scallop fishing industry. Research funded through these funds will improve information that could reduce bycatch and habitat impacts from scallop fishing and therefore, could eliminate the need for more conservative actions with adverse impacts on the small businesses in scallop industry.

Procedures to obtain voluntary actions to minimize bycatch:

There will be no direct economic impacts from these procedures to minimize bycatch. The dissemination of existing information about the geographic distributions of various finfish species and related information will help scallop fishermen to decide where and how to fish in order to reduce bycatch. Therefore, these procedures will have a potential positive economic impact on the scallop vessels by reducing the risk of premature closures of Georges Bank groundfish areas due to high bycatch and will thus increase net economic benefits from the scallop fishery.

6.2.5.5 Social Impacts

Alternatives with a hard TAC would generate social costs stemming from lost revenue if the hard TAC is reached before scallop biomass fished; conversely, a hard TAC has benefits to other fisheries,

namely groundfish, if it enhances stock recovery efforts. In more general terms, however, a hard TAC encourages derby-style fishing if fishermen are concerned about losing access to closed areas, and derby-style fishing has numerous social costs in terms of safety problems, difficult working conditions, as well as lost revenue from relatively heavy landings in short periods of time. The insertion of voluntary actions to minimize bycatch, though not binding, has the potential for positive social impacts for it could empower the industry to “regulate” itself, which could positively enhance outside perception of industry.

6.2.6 Finfish Possession Limits (Section 4.2.6)

Several alternatives are under consideration to adjust the existing groundfish possession limits, to minimize bycatch while discouraging targeting groundfish species in the controlled access areas. The first two alternatives consider changes to the aggregate groundfish possession limit on scallop vessels. The third through fifth alternatives would change the cod possession limit, possibly prohibiting possession or allowing possession for personal use only.

- Alternative 1 is described in Section 4.2.6.1
- Alternative 2 is described in Section 4.2.6.2
- Alternative 3 is described in Section 4.2.6.3
- Alternative 4 is described in Section 4.2.6.4
- Alternative 5 is described in Section 4.2.6.5

6.2.6.1 Biological Impacts

The expected bycatch per trip was calculated by dividing the expected bycatch by the number of allocated trips, following Amendment 10 rules for allocating trips to part-time and occasional limited access vessels. These estimates do not include the catches expected on general category vessels if they are allowed to participate in the access program.

Yellowtail flounder are expected to comprise most of the catch of regulated multispecies (see table below). The bycatch of yellowtail flounder and regulated multispecies is therefore highly dependent on changes in spawning stock biomass for groundfish species, particularly yellowtail flounder, and which areas would be open for controlled access scallop fishing. The highest bycatch rates occur from the high yellowtail flounder bycatch in Closed Area II.

In all cases, the projected average catch per trip is expected to exceed 1,000 lbs. of regulated multispecies and 250 lbs. of yellowtail flounder. High bycatch is expected mainly in Closed Area II, where scallops and rebuild Georges Bank yellowtail flounder overlap. But even without access to Closed Area II (see 2004 Amendment 10 rotation, for example), the average catch per trip is expected to be over 600 lbs. of regulated multispecies and over 300 lbs. per trip of yellowtail flounder. These results are consistent with the observed yellowtail flounder bycatch per pound of scallop landings of 0.016 in Closed Area I, 0.279 in Closed Area II, and 0.010 in the Nantucket Lightship Area; as adjusted by projected changes in groundfish spawning stock biomass and longer trips in the proposed access program.

Based on these estimates, raising the groundfish possession limit to 1,000 lbs./trip would cut discard mortality by 20-33%, compared to the discards under the status quo 300 lbs./trip possession limit. Again, the expected regulated multispecies bycatch per trip varies by an order of magnitude in Closed Area II, compared to Closed Area I and the Nantucket Lightship Area, assuming that the bycatch rate follow the same pattern as the ones observed during the 2000 fishing year.

Bycatch of cod is relatively rare and on average, the projected catches of Georges Bank cod are very low. In general, the average projected bycatch is five or less lbs./trip, but this is the result of an occasional catch of cod on a trip, averaged over many trips with no observed cod. Allowing retention of cod for personal use will reduce discard mortality, since cod do not survive capture by dredges and discards well. On the other hand, the low catch of cod on observed trips suggest that allowing cod retention is unlikely to alter fishing behavior.

Regulations in the Monkfish FMP rely on daily possession limits to reduce the incentive to target monkfish while on a scallop DAS. Except for access boundary alternative 3, the expected catch per DAS is projected to average less than 300 lbs., considerably less than the 996 lbs. whole weight limit that apply to vessels on a scallop DAS. The existing possession limit is likely to be adequate to avoid discarding monkfish in most cases.

There is no possession limit for skates, except for barndoor skate, which has a zero possession limit. Few, if any, scallop trips retain skates for sale, yet these elasmobranchs are a significant part of the incidental catch when fishing in the proposed controlled access areas. Many skates, however, appear to survive capture by dredges and discarding fairly well, but long term survivability following capture by dredges is not known.

Table 125. Projected finfish bycatch per trip (per DAS for monkfish) by year, by rotation alternative, and by access boundary alternative.

2004					
Amendment 10 rotation		Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	
Regulated multispecies (lbs./trip)	666	698	625	698	
Yellowtail flounder (lbs./trip)	354	370	396	370	
Cod (lbs./trip)	3	3	2	3	
Skates (lbs./trip)	1769	1848	1827	1848	
Monkfish (lbs./DAS)	105	110	97	110	
Trips	1081	1081	815	1081	
Days-at-sea used	7064	7079	4911	7064	

2004					
Framework 16 rotation		Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	
Regulated multispecies (lbs./trip)	2499	2546	3315	2507	
Yellowtail flounder (lbs./trip)	2097	2136	2782	2103	
Cod (lbs./trip)	1	1	1	1	
Skates (lbs./trip)	3337	3407	4426	3361	
Monkfish (lbs./DAS)	174	178	251	175	
Trips	1081	1081	815	1081	
Days-at-sea used	7079	7079	4911	7064	

2005					
Amendment 10 rotation		Access boundary			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	
Regulated multispecies (lbs./trip)	5147	3514	5147	5147	
Yellowtail flounder (lbs./trip)	4287	2927	4287	4287	
Cod (lbs./trip)	2	1	2	2	
Skates (lbs./trip)	5947	4060	5947	5947	
Monkfish (lbs./DAS)	304	199	304	304	
Trips	547	815	547	547	
Days-at-sea used	3868	6029	3868	3868	

2005

Framework 16 rotation Access boundary

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Regulated multispecies (lbs./trip)	3152	3218	4429	4721
Yellowtail flounder (lbs./trip)	2463	2509	3595	3677
Cod (lbs./trip)	3	4	3	5
Skates (lbs./trip)	3878	3966	5252	5825
Monkfish (lbs./DAS)	211	216	281	332
Trips	815	815	547	547
Days-at-sea used	6029	6029	3868	3868

2006

Amendment 10 rotation Access boundary

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Regulated multispecies (lbs./trip)	4494	3103	4494	4494
Yellowtail flounder (lbs./trip)	3730	2576	3730	3730
Cod (lbs./trip)	2	2	2	2
Skates (lbs./trip)	5077	3506	5077	5077
Monkfish (lbs./DAS)	260	189	1838	260
Trips	554	816	554	554
Days-at-sea used	3919	5472	554	3919

2006

Framework 16 rotation Access boundary

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Regulated multispecies (lbs./trip)	1128	1176	1430	1732
Yellowtail flounder (lbs./trip)	873	908	1222	1338
Cod (lbs./trip)	3	3	2	5
Skates (lbs./trip)	1214	1270	1345	1871
Monkfish (lbs./DAS)	73	77	445	108
Trips	816	816	554	554
Days-at-sea used	5472	5472	554	3919

2007

Amendment 10 rotation Access boundary

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Regulated multispecies (lbs./trip)	3803	1988	3803	3803
Yellowtail flounder (lbs./trip)	3165	1654	3165	3165
Cod (lbs./trip)	2	1	2	2
Skates (lbs./trip)	4281	2238	4281	4281
Monkfish (lbs./DAS)	219	124	1549	219
Trips	554	1078	554	554
Days-at-sea used	3919	7062	554	3919

2007

Framework 16 rotation Access boundary

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Regulated multispecies (lbs./trip)	2788	2853	5425	5485
Yellowtail flounder (lbs./trip)	2403	2460	4676	4732
Cod (lbs./trip)	2	2	3	3
Skates (lbs./trip)	2702	2758	5257	5292
Monkfish (lbs./DAS)	142	144	1806	256
Trips	1078	1078	554	554
Days-at-sea used	7062	7062	554	3919

6.2.6.2 Habitat Impacts

There are no foreseeable effects on habitat from potential adjustments to the finfish possession limits, unless it modifies fishing behavior to target species other than scallops. Such changes in fishing behavior are not expected.

On the other hand, discarding large amounts of bycatch could also have an adverse effect on habitat if it locally depletes oxygen on the bottom or otherwise ‘fouls’ the bottom. Reducing discarding of normal bycatch could have some unquantified benefits to sensitive habitat.

6.2.6.3 Impacts of Management Measures on Endangered and Other Protected Species

The possession limits proposed in this section address groundfish and monkfish conservation and are not likely to produce either positive or negative impacts on protected resources, including sea turtles.

6.2.6.4 Economic Impacts

Groundfish possession limits

There were two options considered by the Council regarding the multispecies possession limit; the status quo 300-lbs./trip possession limit and the proposed possession limit of 1000 lbs. Because the proposed option increases the possession limit to 1000 lbs. of regulated multispecies, it will have positive impacts on the scallop vessels fishing in the controlled access areas relative to status quo option. The observed catches of regulated multispecies exceeded 300 lbs./trip in the 1999 and 2000 access programs, thus increasing the trip limit will help to reduce discards.

Furthermore, when fishing in the Nantucket Lightship Area on a scallop DAS on controlled access trips, vessels would be allowed to retain and possess no more than 250 lbs./trip of yellowtail flounder. As long as the finfish possession limits are maintained at levels close to the current values, however, the economic impacts from these limits will not be significant for the scallop vessels. This measure is expected to reduce the incentive for targeting yellowtail and the risk of reaching yellowtail TAC in this area before the scallop TAC is caught, resulting in indirect economic benefits for the scallop fishery.

The average bycatch is estimated to be greater than 1,000 lbs. only for trips to Closed Area II, but a higher limit could reduce the incentive to avoid incidental catches of groundfish while targeting scallops. High bycatch can have adverse effects on the scallop fishery either through closing of the access areas prematurely or through more stringent measures that reduce or eliminate access to these areas for scallop vessels. In short, the overall economic impacts of the finfish possession limits are expected to be positive for the scallop fishery.

Additional cod possession limits

The proposed option for allowing vessels retain up to 100 lbs. per trip (per vessel) for personal use, including consumption on board of the vessel or landing for non-commercial use is expected to have positive impacts on the scallop fishery by allowing the crew to take some of the catch home and by preventing violations on a technicality (for example, a violation from having shore-purchased cod onboard or having a recently-caught cod on deck). The alternative option for zero cod possession limit

would have negative impacts on the scallop fishery for the opposite reasons. The status quo option for allowing cod possession regulated under an aggregate groundfish possession limit would provide more flexibility to the vessels and help to reduce regulatory discards. The proposed option will be relatively more effective, however, in ensuring cod bycatch by scallop vessels will be at minimum levels.

6.2.6.5 Social Impacts

Since some alternatives would have similar though slightly higher groundfish limits than other alternatives, it is not expected that the scallop industry will incur any significant social costs or benefits relative to the status quo; moreover, the additional limit for personal use allows some operational flexibility. The possession limit on groundfish in general can be expected to have positive impacts on the groundfish fishery if it helps to enable stock recovery efforts.

6.2.7 Access Seasons (Section 4.2.7)

Simultaneous or sequential access during the seasons when access was permitted during the 2000 scallop fishing year are proposed in Alternatives 1 and 2. A third alternative would not restrict scalloping to any part of the year.

- Alternative 1 is described in Section 4.2.7.1
- Alternative 2 is described in Section 4.2.7.2
- Alternative 3 is described in Section 4.2.7.3

6.2.7.1 Biological Impacts

6.2.7.1.1 Scallops

The time of year when controlled access trips are taken have a large bearing on the amount of mortality associated with a TAC. Scallops that fishermen catch in the spring tend to have a high meat yield because food is more available when there is no thermocline and because the scallops are using most of the energy they intake for growth, rather than spawning. In some areas, meat yield for a given size scallop declines by as much as 40% relative to the spring peak in meat yield.

The TACs are calculated using meat yields that are observed at the time of the annual resource survey in July and August. Therefore fishing that occurs earlier in the spring would remove fewer scallops for a constant TAC, whereas fishing in the fall would remove more scallops. Scallop mortality for a constant TAC would therefore be lower if the scallops are caught in the spring (March – June), than if they are caught in the fall (September to December).

6.2.7.1.2 Groundfish

Restricting access to the groundfish closed areas to periods with less groundfish spawning activity may reduce any adverse impacts that scallop dredge fishing may have on groundfish spawning. There are three main issues to consider:

- (1) The time of spawning activity in the groundfish closed areas;
- (2) The absence or presence of spawning activity in the groundfish closed areas; and
- (3) Scallop dredge impacts on groundfish spawning.

An additional concern is that estimates of groundfish bycatch by scallop dredges that is based on tows observed outside spawning seasons may not correctly estimate the bycatch that will result when groundfish are aggregated for spawning. This issue is discussed in another section.

For decades, the closed areas on Georges Bank have been recognized as important to groundfish spawning, particularly for cod, haddock, and yellowtail flounder. The two areas were first established as seasonal spawning closures under ICNAF. They continued to be used as spawning closures – primarily to protect cod and haddock - under the groundfish plan until they became year round closed areas in 1994. Prior to their establishment as year round closed areas, however, scallop dredge fishing was allowed in the seasonal spawning closures. The NLSA was also first adopted as a groundfish mortality closure in 1994. Closed area access programs since 1997 limited scallop dredge access to periods outside of peak spawning periods.

Observed spawning periods are described in the Essential Fish Habitat source documents for each species. This information is summarized in Table 128 below for many North Atlantic finfish. For many species, there is a wide range of possible spawning months, but there is also a distinct peak when most spawning activity occurs. The general pattern is for spawning to occur in the southern part of the range for a species earlier in the year, and then move north. For most groundfish species, spawning takes place during the first half of the calendar year. Peak spawning for witch flounder and yellowtail flounder is in the middle of the year. Peak spawning for ocean pout occurs in the fall, while for Atlantic halibut it occurs in November and December.

The seasonal nature of spawning can also be determined by examining distributions of eggs documented by the MARMAP surveys. Table 129 summarizes the distribution of eggs, indicating the periods with the largest observed densities. Charts of egg collections also illustrate the seasonal and geographic distribution of spawning for groundfish stocks (keeping in mind that egg distributions lag actual spawning activity since depending on species and environmental conditions, eggs may require from three days to two weeks to hatch after spawning,). These charts are reproduced in Figure 11 through Figure 17 for those species that spawn in the vicinity of CAI, CAII, and the NLSA. For most groundfish species, eggs are pelagic and thus are dispersed by water currents, so these charts do not precisely indicate the locations of spawning activity. Still, they do give some indication of the general locations of spawning for each species and show that there are high concentrations of eggs – and presumably spawning activity - in the closed areas. (Winter flounder eggs are demersal and adhesive, though some were collected in the MARMAP surveys. Generally, winter flounder eggs on Georges Bank were collected on sandy bottoms, in depths of one to forty fathoms on Georges Bank and Nantucket Shoals).

In order to provide a subjective summary of the key months for groundfish spawning activity on Georges Bank, the information from Table 128 and Table 129 was used to identify a monthly index of spawning activity and egg distributions. For each groundfish species, a value was assigned for the distribution of eggs or spawning activity: a 1 was assigned for peak activity, a 2 for some activity, and a 3 for no activity. These scores were then averaged, and the months then ranked. A lower score thus means there was more activity observed during that particular month. This ranking suggests that the most important months – taking into account the major groundfish species as a whole - are February through June (Table 127).

Table 126. Mean monthly scores for Georges Bank American Plaice, Atlantic cod, Atlantic halibut, Georges Bank haddock, pollock, red hake, Georges Bank windowpane, winter flounder, Georges Bank witch, and yellowtail. 1=peak month, 2=common month, 3=uncommon or none

Month	Mean score Eggs	Mean score Spawning activity	Mean score both
January	2.22	2.33	2.28
February	2.11	2.22	2.17
March	1.89	2.22	2.06
April	1.89	1.78	1.83
May	1.89	1.67	1.78
June	2.11	2.22	2.17
July	2.33	2.44	2.39
August	2.56	2.44	2.50
September	2.56	2.67	2.61
October	2.56	2.78	2.67
November	2.33	2.22	2.28
December	2.22	2.33	2.28

Table 127. Ranking of monthly scores for spawning activity (1=highest ranking, 12=lowest).

Month	Mean score Eggs	Mean score Spawning activity	Mean score both
January	6	7	6
February	4	3	4
March	1	3	3
April	1	2	2
May	1	1	1
June	4	3	4
July	8	9	9
August	10	9	10
September	10	11	11
October	10	12	12
November	8	3	6
December	6	7	6

Table 128. Spawning periods for North Atlantic finfish. (Source: Essential Fish Habitat source documents)

Species	spawning months												Notes	
	January	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.		
American Plaice														
GB Atlantic Cod														*peaks in winter and spring
GOM Atlantic Cod														
Atlantic Halibut														*spawning in late winter early spring
GB Haddock														
GOM Haddock														
Browns Bank Haddock														
Northern Ocean Pout														
Southern Ocean Pout														
Scotian Shelf Pollock														
GOM Pollock														
Redfish														*copulation from Oct-Jan; fertilization from Feb-April; no peak times given
Northern White Hake														*no peak times given
Southern White Hake														*no peak times given
GB Windowpane														
MAB Windowpane														*split spawning seasons
Winter Flounder														
GB Witch Flounder														
GOM Witch Flounder														
MAB Witch Flounder														
SNE Yellowtail Flounder														
MAB Yellowtail Flounder														
GB Yellowtail Flounder														
GOM Yellowtail Flounder														
Yellowtail Flounder														*north into Canadian waters

Table 128. Spawning periods for North Atlantic finfish. (Source: Essential Fish Habitat source documents) (cont.)

Species	January	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Notes
GB Atlantic Herring													
GOM Atlantic Herring													
Nova Scotia Atlantic Herring													
Jefferys Ledge Atlantic Herring													*no peak times given
Nantucket Shoals Atlantic Herring													
Goosefish													
Offshore Hake													*no peak times given
GB Red Hake													
GOM Red Hake													
NYB Red Hake													
GB Silver Hake													
GOM Silver Hake													*no peak times given
SNE Silver Hake													*no peak times given
MAB Silver Hake													*no peak times given
Red Deepsea Crab													*fall - spring; no peak times given
Barndoor Skate													*no peak times given
Cleanose Skate													*no peak times given
Little Skate													
Rosette Skate													*no peak times given
Smooth Skate													*no peak times given
Thorny Skate													*no peak times given
Winter Skate													*no peak times given

Table 129. Observed hatching months for North Atlantic finfish (Source: Essential Fish Habitat source documents)

hatching months
 peak hatching months

Species	January	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Notes
GB American Plaice													*no peak times given
GOM American Plaice													*no peak times given
Atlantic Cod													*peaks winter and spring
Atlantic Halibut													*same info as spawning adults
GB Haddock													
GOM Haddock													
Browns Bank Haddock													
Ocean Pout													*no peak times given
Pollock													
Redfish													*eggs fertilized internally and released as larvae
White Hake													*no peak times given
GB Windowpane													*no peak times given
MAB Windowpane													
Winter Flounder													
GB Witch Flounder													
GOM Witch Flounder													
MAB Witch Flounder													
SNE Yellowtail Flounder													
GOM Yellowtail Flounder													*no peak times given
Yellowtail Flounder													*no stocks given

Table 129. Observed hatching months for North Atlantic finfish (Source: Essential Fish Habitat source documents)

Species	January	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Notes
GB Atlantic Herring													*hatch with 10-15 days of spawning
GOM Atlantic Herring													*hatch with 10-15 days of spawning
Nova Scotia Atlantic Herring													*hatch with 10-15 days of spawning
Jefferys Ledge Atlantic Herring													*hatch with 10-15 days of spawning
Nantucket Shoals Atlantic Herring													*hatch with 10-15 days of spawning
Goosefish													
Offshore Hake													
Red Hake													
GB Silver Hake													
GOM Silver Hake													*no peak times given
SNE Silver Hake													*no peak times given
MAB Silver Hake													*no peak times given
Red Deepsea Crab													*no peak times given
Barndoor Skate													*no peak times given
Clearnose Skate													*no peak times given
Little Skate													*laid in spring; hatched in late fall, winter
Rosette Skate													*no peak times given
Smooth Skate													*no peak times given
Thorny Skate													*throughout entire year; highest in summer
Winter Skate													*no peak times given

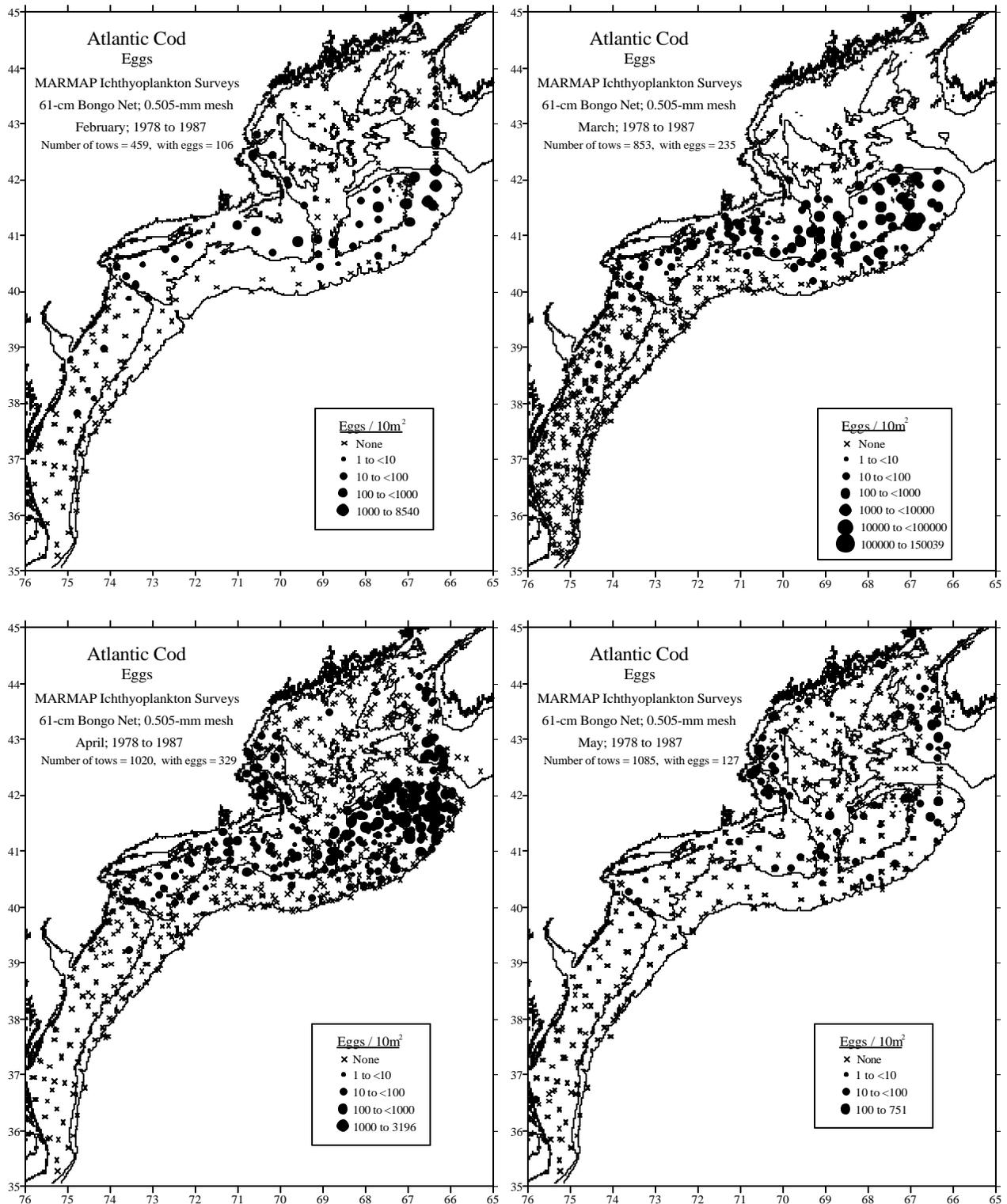


Figure 11. Distribution and abundance of Atlantic cod eggs collected during NEFSC MARMAP ichthyoplankton surveys, February through May, 1978-1987 [see Reid et al. (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

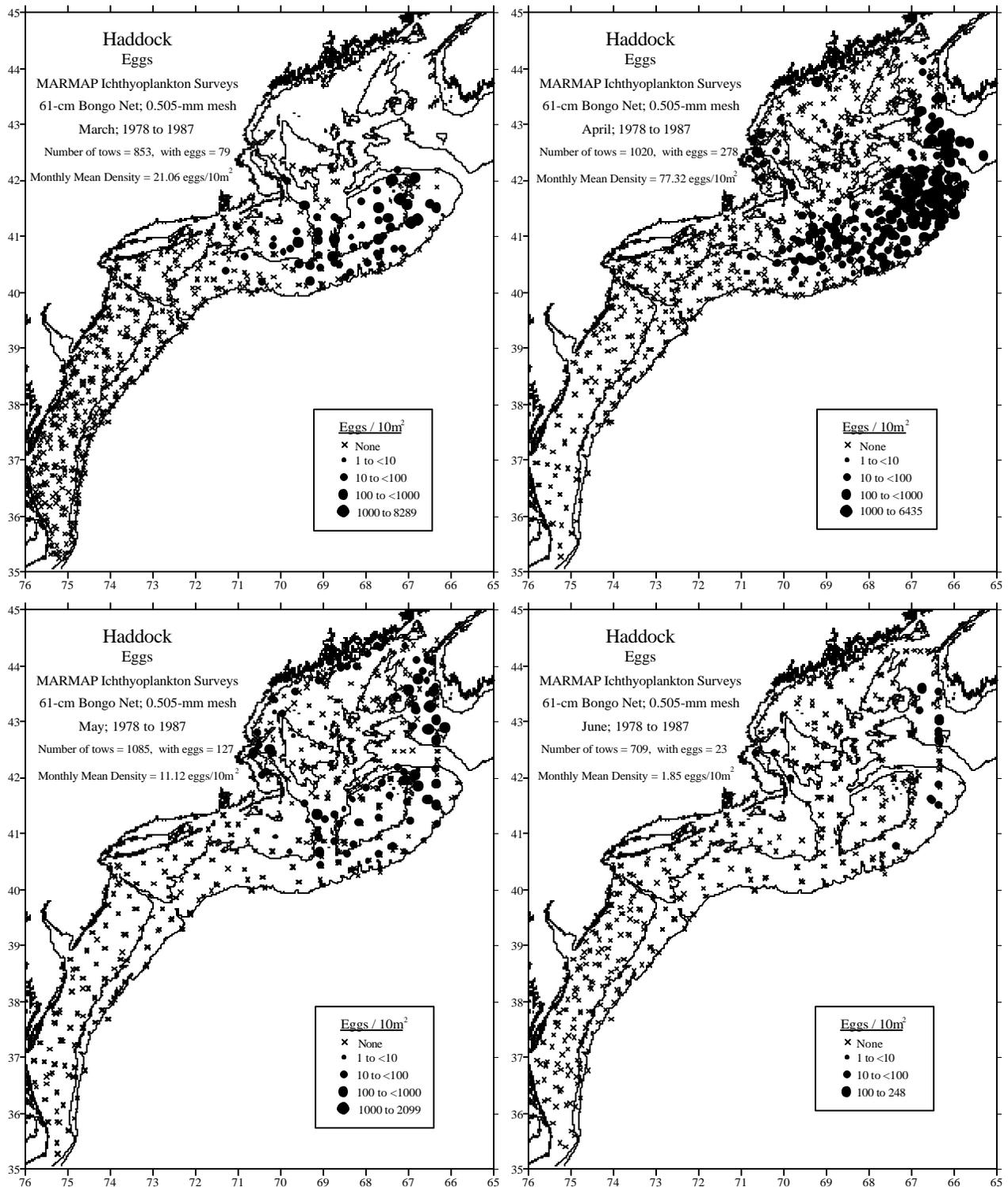


Figure 12. Distribution and abundance of haddock eggs collected during NEFSC MARMAP ichthyoplankton surveys, March through June, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

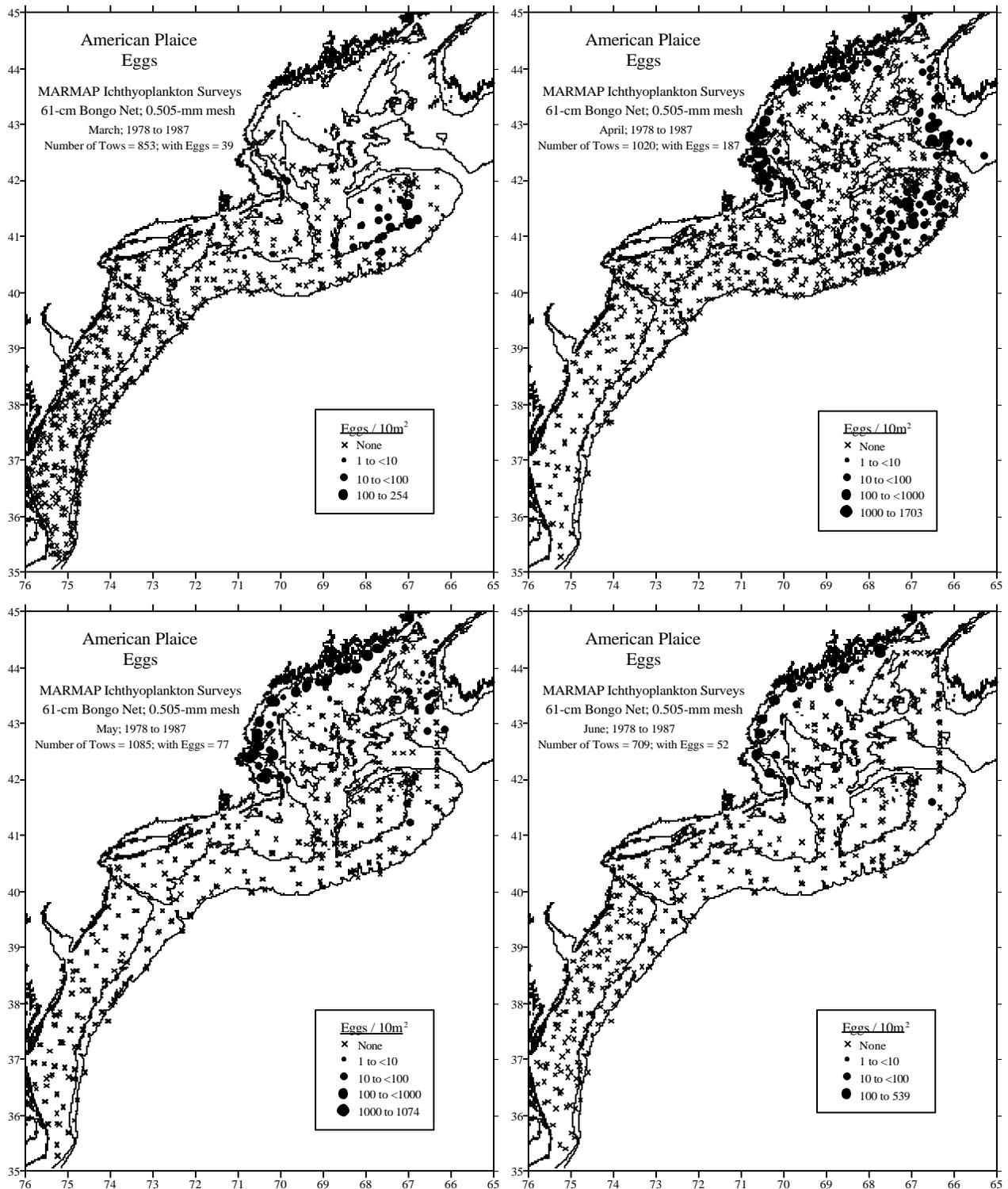


Figure 13. Distribution and abundance of American plaice eggs collected during NEFSC MARMAP ichthyoplankton surveys, March through June, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

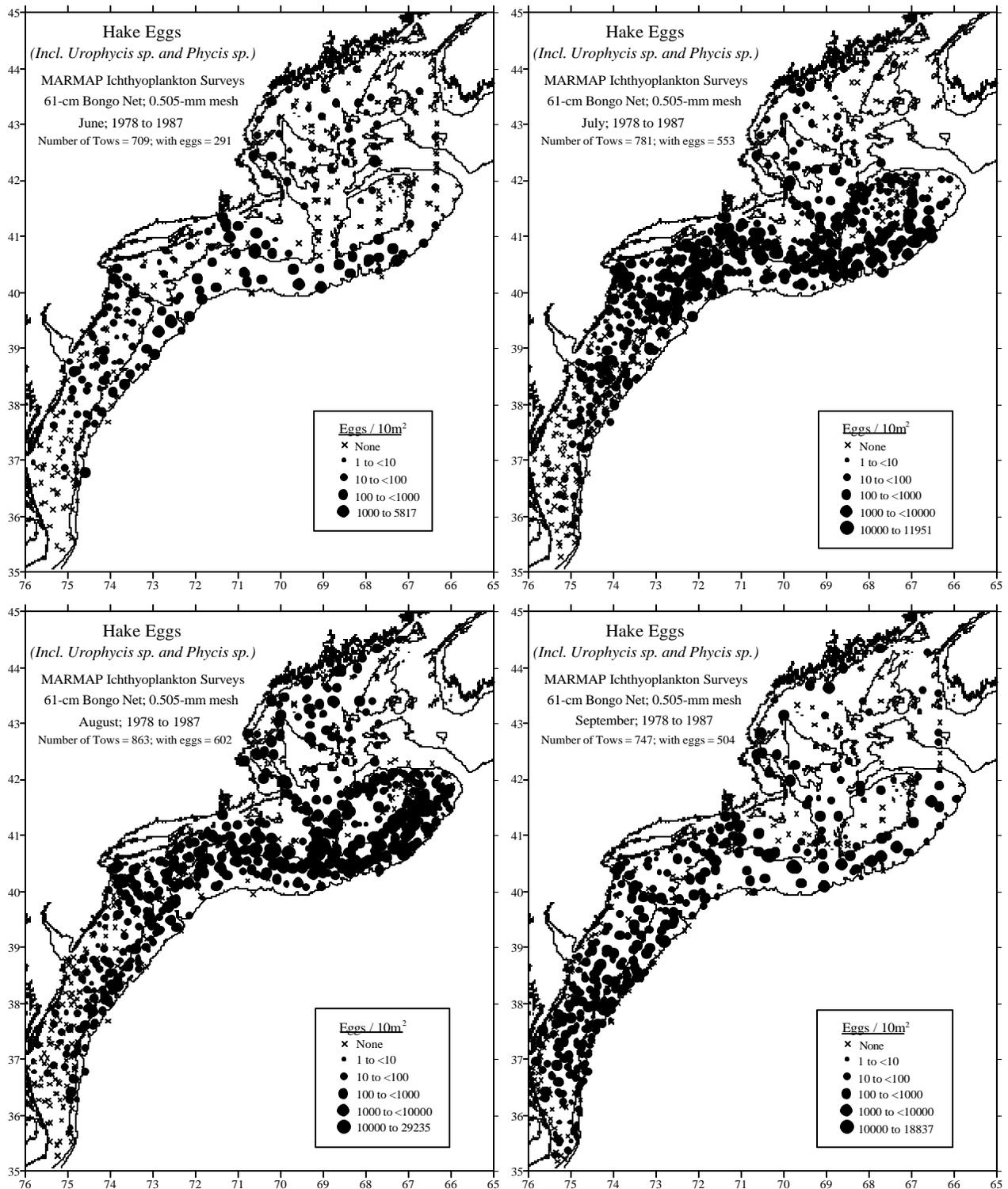


Figure 14. Distribution and abundance of hake (all spp.) eggs collected during NEFSC MARMAP ichthyoplankton surveys, June through September through June, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

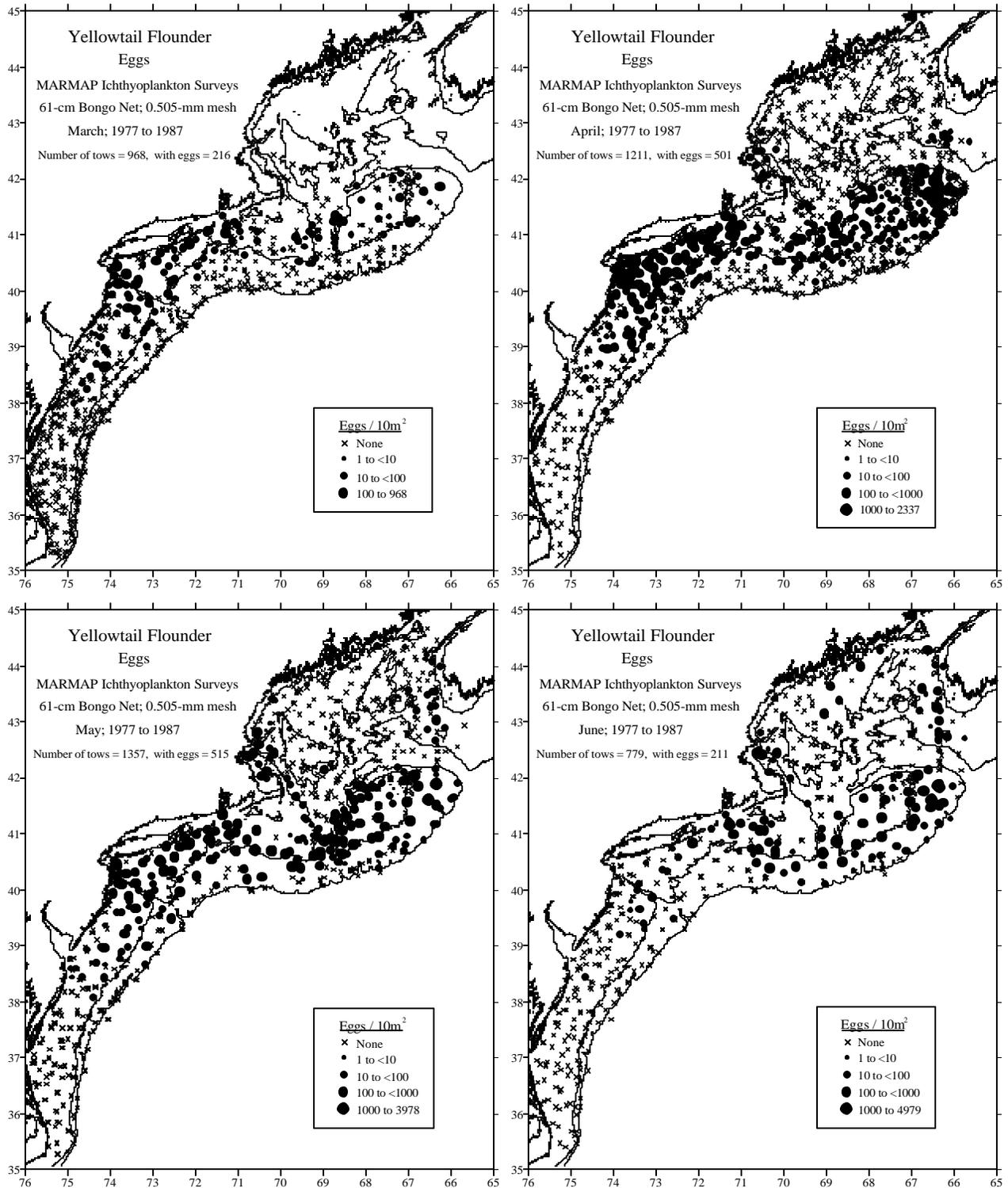


Figure 15. Distribution and abundance of yellowtail flounder eggs collected during NEFSC MARMAP ichthyoplankton surveys, March through June, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

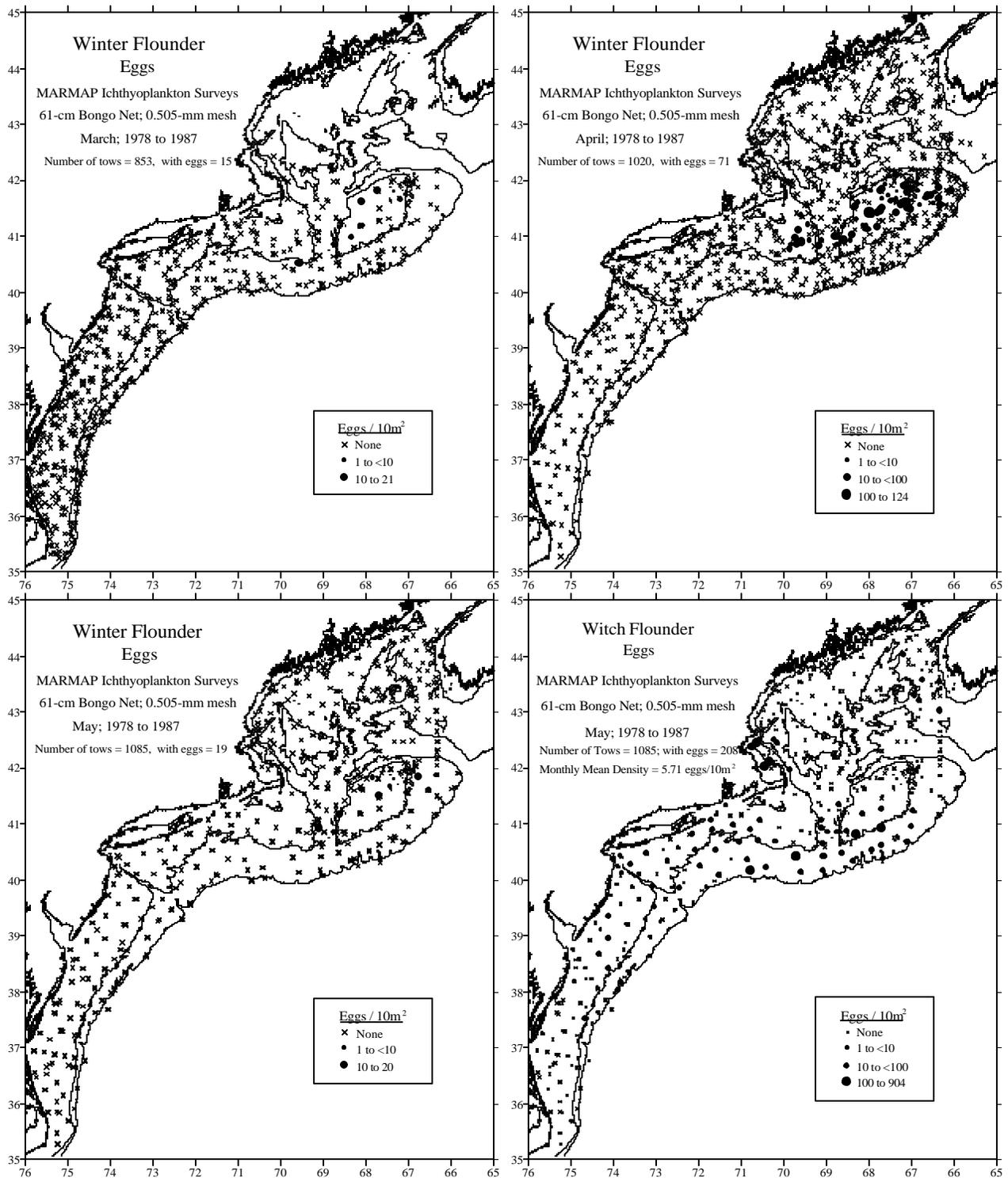


Figure 16. Distribution and abundance of winter flounder eggs collected during NEFSC MARMAP ichthyoplankton surveys, March through June, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

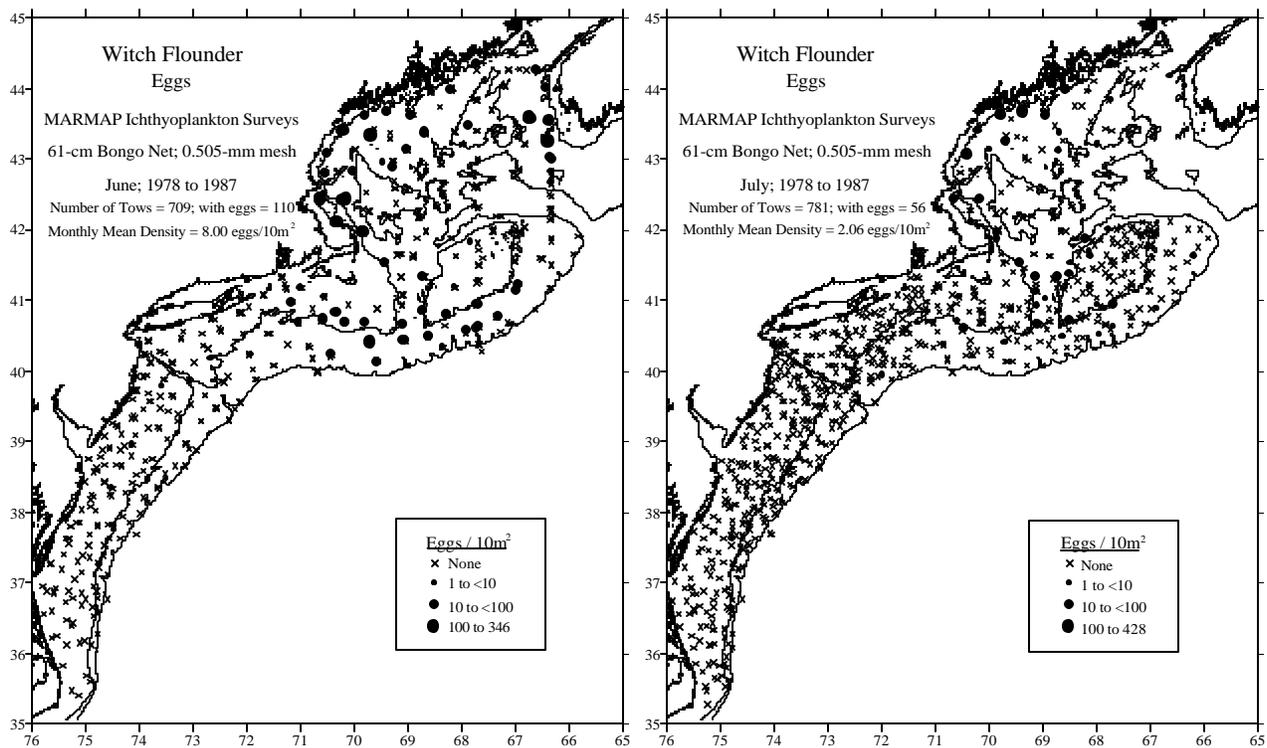


Figure 17. Distribution and abundance of witch flounder eggs collected during NEFSC MARMAP ichthyoplankton surveys, June and July, 1978-1987 [see Reid *et al.* (1999) for details]. Abundance is represented by dot size, and sampling effort is indicated by small x.

Additional indications of the importance of the closed areas to spawning activity can be determined from the spring trawl surveys. While these surveys are not specifically timed to coincide with groundfish spawning, ripe and running fish are caught by the surveys. The number of ripe and running cod and haddock were plotted to determine if these fish are more common in the Georges Bank closed areas. Plots are shown in Figure 18 and Figure 19. Spawning haddock have been caught throughout Georges Bank during the period 1974 through 2003. The highest distribution of ripe and running haddock caught in the spring survey occurs on the eastern part of Georges Bank, in Canadian waters. Other than this area, there are secondary concentrations within CAI and CAII (primarily along the Hague Line), as well as in the Great South Channel west of CAI. While some ripe fish have been caught in the NLSA, it does not appear to be an area of concentration. Fewer ripe and running cod have been caught by the spring survey, particularly on Georges Bank in recent years. The plot of locations for where ripe fish have been caught show once again that the northeastern peak of GB is an important spawning area. Other important areas include CAI and the area north of Cultivator Shoals. These figures show that CAI and CAII are important areas for haddock spawning activity.

The final question to consider is whether scallop dredge fishing interferes with groundfish spawning. There is evidence that fishing activity can disrupt spawning of cod due to the nature of spawning and the impacts of fishing gear. Cod have been shown to have distinctive spawning behaviors. Male cod compete for females and display for female individuals through circling behavior. Males also form a dominance hierarchy based on size. Female cod descend to the bottom to spawn, select males, and initiate spawning. The females release eggs about five hours after ovulation. If spawning behavior is

disturbed, viable eggs may become non-viable if retained too long in the female ovary. (Hutching et al. 1999). Another study has shown that males arrive at spawning areas first and establish territories. Both female and male dominated shoals form. The male dominated shoals tend to be shallower and are where spawning occurs, whereas the female-dominated shoals consist mostly of spent females (Morgan and Trippel 1996). Morgan et al. (1997) reported direct evidence of the disruption of spawning aggregations by bottom trawls. An echosounder transect of a trawl track showed that trawling produced a 300-meter wide hole in spawning aggregations of cod. Densities were very low in an near the trawl track and increased up to a distance of 200-400 meters on each side of the track, with the disturbances observed to last for over an hour. While this information is not directly applicable to scallop dredges (dredges have a far smaller sweep width than otter trawls) or other species, it does suggest a possibility that scallop dredges may disrupt spawning aggregations of cod and may interfere with spawning activity.

In summary, CAI, CAII, and, to a lesser extent, the NLSA are important areas for groundfish spawning activity. The peak months for this activity are the period January through June, though the time of spawning varies for each species. There is direct evidence that trawl fishing disrupts the behavior of spawning cod, suggesting that scallop dredge activity may have similar effects on a smaller scale given the difference in gear design. Preventing scallop dredge access to the groundfish closed areas from January through June 15 will avoid interactions with spawning groundfish for most species. This is important for cod, since spawning biomass in 2002 was only 12 percent of the rebuilding target and cod recruitment has been poor for a number of years; any interference with cod spawning in the closed areas from scallop dredges should be avoided until the status of this stock improves. It may also be an important consideration for SNE/MA yellowtail flounder due to its low stock size, though evidence of significant spawning activity in the NLSA is not as conclusive. In addition, there is no research on the effects of trawling on yellowtail flounder spawning behavior.

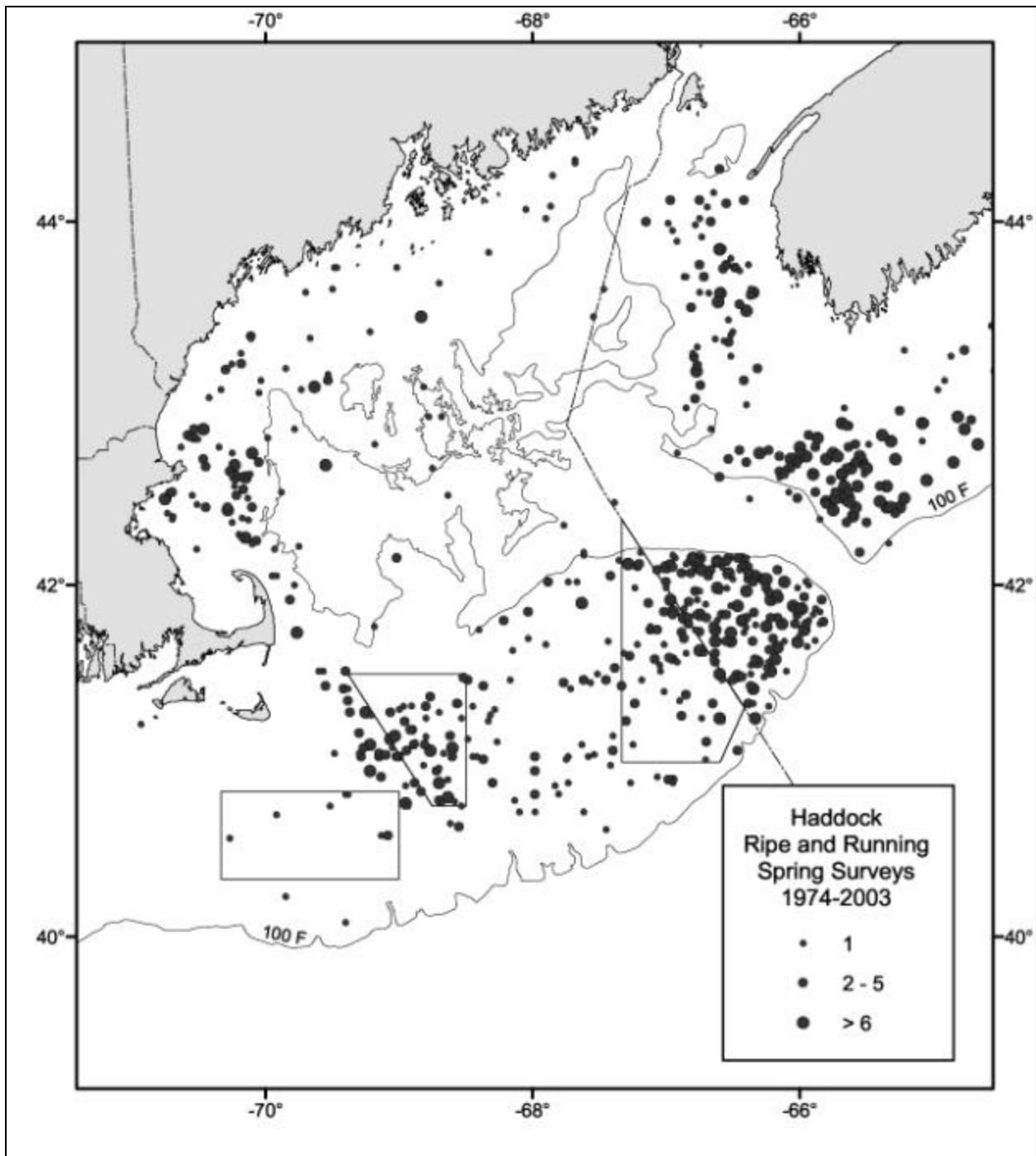


Figure 18. Catch of ripe and running haddock in the spring trawl survey, 1974-2003

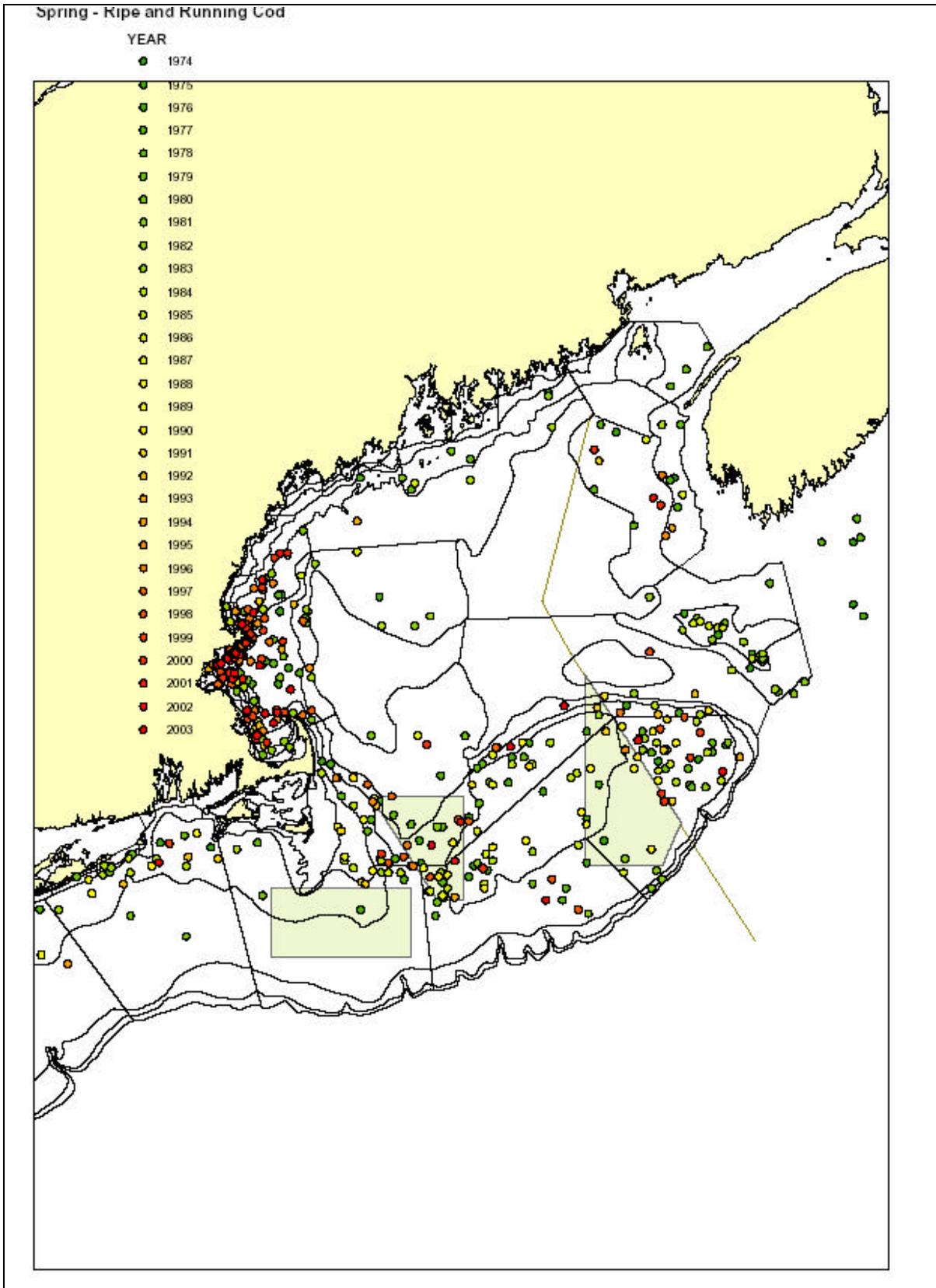


Figure 19: Ripe and running cod caught by the spring trawl survey

6.2.7.2 Habitat Impacts

Seasonal variations in the access area program will not likely produce increased benthic habitats. Recovery times for benthic communities following disturbance by scallop dredges have been estimated to be months to years in sandy habitats and several years in gravel habitats (NREFHSC 2002).

6.2.7.3 Impacts of Management Measures on Endangered and Other Protected Species

Access to the Georges Bank Areas, whether sequential, simultaneous or year round is unlikely to affect sea turtles. Few turtles are present at any time of the year because of water temperature preferences, but could be more seasonally abundant during the summer months. The differences however, are not discernable to a degree that would lead to the selection of one alternative over another based on impacts to sea turtles.

6.2.7.4 Economic Impacts

Proposed option will not allow access during February 1 to June 14 to avoid having scallop fishing when many species of groundfish are at peak spawning activity. As a result, this measure could have positive economic impacts on the scallop fishery by making access to the Georges Bank groundfish areas more acceptable. It will allow, however, simultaneous access to all Georges Bank groundfish areas during these months. As a result, the proposed option will provide more flexibility to fishermen to maximize their landings and revenues from these areas compared to alternative-1, which allowed only sequential access to these areas. Providing year-round access to the Georges Bank groundfish areas under alternative 3 would improve safety and will help to spread out landings throughout the year and prevent price reductions from higher landings when fishing were limited to specific seasons and months. Considering the costs and benefits, however, potential adverse effects on groundfish spawning and potentially higher bycatch during months when bycatch levels could not be predicted could outweigh benefits of year-round access. Such adverse impacts on groundfish fish would eventually have negative impacts on the scallop fishery through more stringent measures that reduce or eliminate access to these areas for scallop vessels.

Not allowing access during February 1 to June 14 would avoid having scallop fishing when many species of groundfish are at peak spawning activity. As a result, this measure could have positive economic impacts on the scallop fishery by making access to the Georges Bank groundfish areas more acceptable. Simultaneous access to all Georges Bank groundfish areas during these months will provide more flexibility to fishermen to maximize their landings and revenues from these areas. Providing year-round access to the Georges Bank groundfish areas will improve safety and will help to spread out landings throughout the year and prevent price reductions from higher landings is fishing were limited to specific seasons and months. The biological impacts of a year-round access on bycatch species are not analyzed at this point, however. Therefore, the economic analysis of these options cannot be completed at this time.

6.2.7.5 Social Impacts

Since most of the access areas are well offshore and because there is a penalty for terminating a trip early, people have expressed concern over restricting access by season and forcing vessels to fish during August to October. Some fishermen may feel compelled to make controlled access trips to Georges Bank areas despite the risk of a hurricane or nor'easter in the fall. If they are already fishing in

an access area, they may also be reluctant to return to port in the face of bad weather, because they risk losing two days-at-sea to the broken trip adjustment procedure. Some fishermen feel that a restricted season may pose a risk to the safety of human life at sea.

Given the similarity of some alternatives to the status quo, it is expected that no additional social costs or benefits would be incurred. The preferred alternative does have social costs compared to alternative 3 (preferred by the large-boat scallop industry), such as safety issues that stem from a compressed season subject to weather difficulties and the revenue loss stemming from fishing during a season in which scallops are spawning. There may, however, be social benefits to other segments of industry that tend to fish during the other season (e.g. general category and small boat fishery), for their niche fishery can continue at its competitive advantage.

6.2.8 At-Sea Observers, TAC Set-Aside, And Fishery Monitoring (Section 4.2.8)

Sea sampling is proposed to monitor the catches of yellowtail flounder TAC and to estimate the bycatch of other species. The first two alternatives would increase sea sampling to a level that would estimate the yellowtail flounder catch with a 30% coefficient of variation, similar to the goals for other programs measuring groundfish discards. This sea sampling would be funded by a scallop TAC set-aside, which may be higher than the existing 1 percent set aside under Amendment 10 regulations.

- Alternative 1 is described in Section 4.2.8.1
- Alternative 2 is described in Section 4.2.8.2
- Alternative 3 is described in Section 4.2.8.3

6.2.8.1 Biological Impacts

The purpose of increasing the proportion of trips having onboard observers is to collect data to enable better management and to ensure that the fishery does not exceed biological limits. While this has not been quantified, it should allow better management and more access to the scallop resource, while minimizing bycatch mortality and other impacts.

Without this data, the Council might have to be more cautious about allowing scallop fishing access in the groundfish closed areas. Fewer trips might be allocated, for example, if the expected catch exceeds acceptable limits, despite whatever voluntary steps might be taken to avoid bycatch, especially given the overfished status of many groundfish stocks.

Since yellowtail flounder is a groundfish species that is most vulnerable to incidental catch for vessels using dredges to target scallops, the Council is particularly concerned that the catches don't become excessive, even if conditions are different than those that existed during the 2000 access program. Southern New England yellowtail flounder are overfished, presently at historic low biomass. Georges Bank yellowtail flounder, on the other hand, are subject to strict TACs under the US/Canada sharing agreement, which could cause the US to close DAS fisheries in statistical area 5Jm.

Under some alternatives, the projected yellowtail flounder bycatch is expected to exceed 10% the US TAC, a limit the Council believes is equitable for yellowtail flounder catch in the controlled access areas. All catches need to be monitored and the Council wanted to achieve the same level of precision in counting yellowtail flounder bycatch in the scallop fishery as the precision that NMFS is attempting to achieve for bycatch estimates in other fisheries.

Now that data are available to estimate bycatch and precision, the Council wanted to achieve a sampling frequency that would achieve no less than a 30% coefficient of variation (CV) in any access area. Instead of setting a somewhat arbitrary goal of a minimum sampling frequency, the Council is considering changing the goal to achieve a minimum level of precision.

Variance in the 2000 fishing year bycatch estimates were calculated from the data collected on trips having onboard observers, for each controlled access area. For species that had low variation in catches, the estimate of the mean catch per pound of retained scallop meat was fairly precise, having CVs of 15% or less. For other species, the catches were spotty and variable. The precision of the bycatch estimates for the observed bycatch during the 2000 access program is given in Table 130.

Table 130. Coefficient of variation of observed bycatch per pound of landed scallop meat for observed trips during the 2000 area access program.

Access area Trips	Closed Area I	Closed Area II	Nantucket Lightship Area
	107	78	51
Goosefish	13%	16%	13%
Winter flounder	11%	23%	22%
Summer flounder	43%	46%	37%
Witch flounder	26%	15%	39%
Yellowtail flounder	14%	12%	15%
American plaice	38%	20%	92%
Windowpane flounder	12%	21%	17%
Halibut	78%	89%	100%
Cod	16%	23%	47%
Haddock	40%	51%	No catch
Red hake	29%	18%	22%
Silver hake	19%	17%	28%
Little skate	29%	27%	33%
Winter skate	45%	29%	38%
Barndoor skate	30%	35%	26%
Thorny skate	61%	57%	71%

These CVs were calculated as follows: For each observed trip into the closed areas, the total weight of each bycatch species b_i and of the landed scallop meats s was recorded, so that the rate of bycatch per unit weight of scallop meats is $c_i = b_i/s$. For each region and bycatch species, the mean m_i and standard deviation s_i over all trips in that region was calculated. The coefficient of variation (cv_i) for the estimated mean of the i^{th} bycatch species in a given region is then

$$cv_i = \frac{s_i}{m_i \sqrt{n}},$$

where n is the number of trips in that region.

Since variation varies with the square root of the number of samples, the CV can be calculated for a range of observations and divided by the total number of trips to be allocated in 2004-2007 to estimate a minimum sampling frequency, associated with a 30% CV for yellowtail flounder catches, or any other value. A graphic summary of how the CV varies with sample size in each area for the above observed species is shown in Figure 20 to Figure 22.

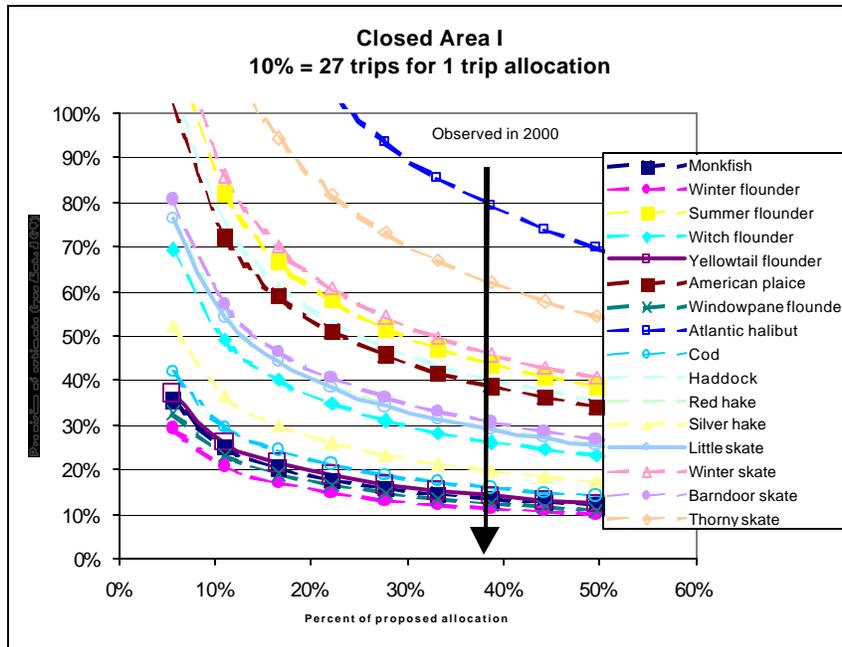


Figure 20. Changes in precision of bycatch estimates by species in Closed Area I, based on observed catch rates in the 2000 area access program. The sampling frequency in percent is the number of samples divided by the proposed allocation of trips in 2004.

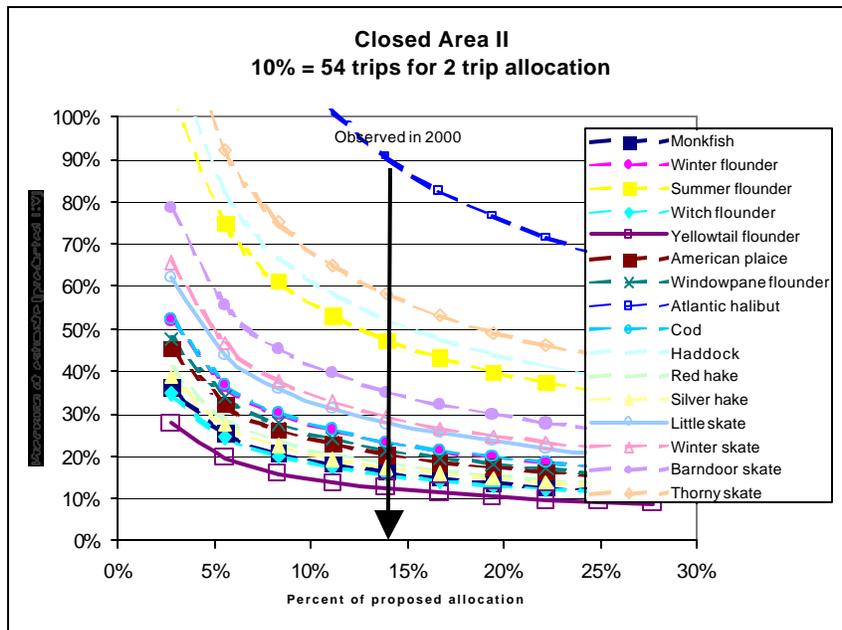


Figure 21. Changes in precision of bycatch estimates by species in Closed Area II, based on observed catch rates in the 2000 area access program. The sampling frequency in percent is the number of samples divided by the proposed allocation of trips in 2005.

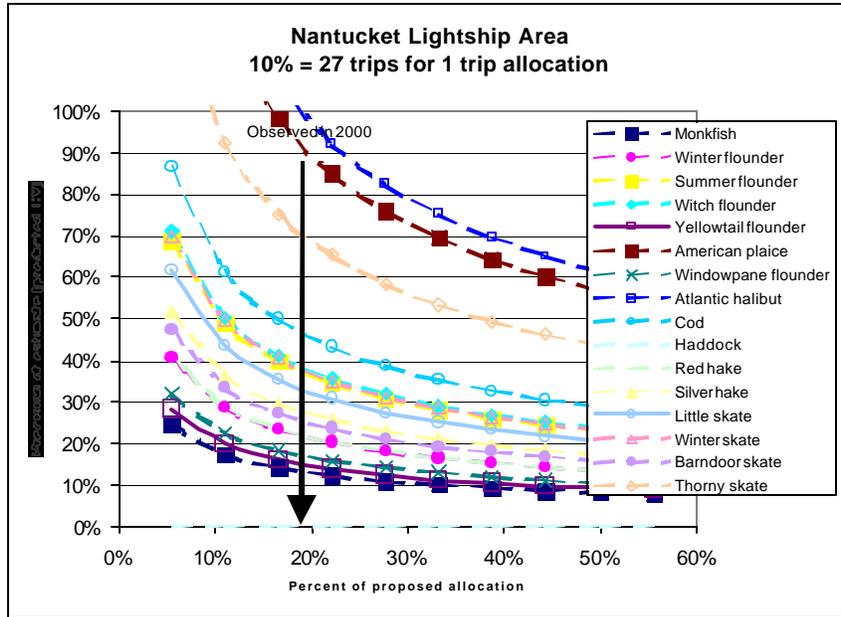


Figure 22. Changes in precision of bycatch estimates by species in the Nantucket Lightship Area, based on observed catch rates in the 2000 area access program. The sampling frequency in percent is the number of samples divided by the proposed allocation of trips in 2004.

The bycatch rate for yellowtail flounder was a little more variable in Closed Area I than in Closed Area II and the Nantucket Lightship Area. Therefore the predicted number of trips to achieve a 30% CV on the yellowtail flounder bycatch rate is 23 trips, or 7.8% of the allocations (TAB), if there is one trip per full-time vessel allocated. The sampling frequency in percent would be halved if the allocation increased to two full-time trips. In Closed Area II and the Nantucket Lightship Area, only 13 observed trips are needed to achieve a 30% CV on the yellowtail flounder bycatch rate.

Increasing the number of samples by 125%, to 52 and 29 trips, respectively improves precision by 33% to achieve a yellowtail flounder CV of 20%. Just as important, this increase in sampling would increase the number of species with at least a 30% CV on the bycatch estimate from 4 to 6 species in Closed Area I, from 1 to 5 species in Closed Area II, and from 2 to 5 species in the Nantucket Lightship Area.

Assuming that the daily observer cost, charged to the vessel, will be \$707 and that scallop prices will be between \$3.64 to 3.90 per pound, it would require a 1,200 lb. scallop possession limit allowance to compensate the vessel for the cost of carrying the observer. This amount varies by area and year, due to fluctuations in the daily catch rate and the price of scallops, since the calculation takes into account the extra time that vessels would spend catching and processing the extra 1,200 lb. Using these estimates, a one-percent TAC set aside would be sufficient to provide for these landings on enough observed trips to achieve a 20% CV on the yellowtail flounder bycatch rates. The exception is in Closed Area I, where the yellowtail flounder bycatch rate is more variable and it would take a two-percent TAC set aside to compensate the vessels for the daily observer cost to achieve a 20% CV.

Table 131. Predicted CVs for species observed as bycatch in the 2000 area access program, at sampling levels predicted to achieve a 30 and 20% CV on the estimate of yellowtail flounder bycatch per pound of landed scallop meat.

Access area Target yellowtail flounder CV Observed trips Percent Number of species with CV < 30%	Closed Area I		Closed Area II		Nantucket Lightship Area	
	30%	20%	30%	20%	30%	20%
Observed trips	23	52	13	29	13	29
Percent	7.83%	17.65%	4.36%	9.81%	4.48%	10.10%
Number of species with CV < 30%	4	6	1	5	2	5
Goosefish	28.8%	19.2%	39.1%	26.0%	26.4%	17.6%
Winter flounder	23.8%	15.9%	56.3%	37.5%	43.5%	29.0%
Summer flounder	93.9%	62.5%	115.0%	76.6%	73.8%	49.2%
Witch flounder	56.2%	37.4%	37.5%	25.0%	76.1%	50.7%
Yellowtail flounder	30.0%	20.0%	30.0%	20.0%	30.0%	20.0%
American plaice	82.8%	55.1%	49.3%	32.9%	181.9%	121.2%
Windowpane flounder	26.6%	17.8%	51.9%	34.6%	34.0%	22.7%
Halibut	169.5%	112.9%	220.0%	146.6%	197.4%	131.5%
Cod	34.0%	22.7%	56.8%	37.8%	92.7%	61.8%
Haddock	86.2%	57.4%	126.5%	84.3%	No observed catch	
Red hake	62.5%	41.6%	44.5%	29.6%	43.8%	29.2%
Silver hake	42.1%	28.1%	42.0%	28.0%	55.3%	36.8%
Little skate	62.0%	41.3%	67.4%	44.9%	65.9%	43.9%
Winter skate	98.3%	65.5%	71.1%	47.4%	75.0%	50.0%
Barndoor skate	65.4%	43.6%	85.5%	57.0%	50.7%	33.8%
Thorny skate	132.6%	88.3%	141.4%	94.2%	139.7%	93.0%

6.2.8.2 Habitat Impacts

There are no foreseeable impacts on habitat from alternatives to enhance sea sampling, although greater efforts to collect invertebrate catch data could help to assess the type of effects.

6.2.8.3 Impacts of Management Measures on Endangered and Other Protected Species

Documentation of scallop fishery activities enhances any analyses of sea turtle or any other protected species interactions. Therefore, provisions to fund observer coverage, document vessel activities, authorize trips and collect harvest information provide an indirect benefit to protected resources.

6.2.8.4 Economic Impacts

Framework 16 proposes to continue with the status quo sampling frequency funded with a one percent TAC set-aside. Although TAC set-aside will reduce part of the scallop revenue available to the scallop vessels, these funds will reduce the compliance costs for vessels by providing compensation for observer coverage. Monitoring of scallop landings and bycatch will help to better manage the scallop resource and area access programs, and thus will indirectly benefit the participants in the scallop fishery. Because the proposed option keeps the TAC set aside at one percent, it will minimize the costs of compliance for the scallop vessels compared to alternative options (options 1 and 2) which would increase TAC set-aside to provide enhanced sampling frequency. Analysis prepared for the final framework meeting indicated that a one-percent set aside would be sufficient to achieve the target precision for yellowtail flounder bycatch estimates, a 30% CV, with a \$707 per day observer cost, eliminating the need to increase the TAC set-aside proposed by the non-selected options 1 and 2.

Vessels that carry an observer would be allocated additional scallops, in the form of a scallop possession limit exemption, to partially compensate the vessel and crew for the observer's daily cost. At an observer cost of \$707 per DAS, and an estimated price of \$3.65 per pound of scallops in 2004, about 200 lbs. allowance per DAS is estimated to generate sufficient revenue to pay for observers. However, landing extra pounds will also extend the trip, thus will increase the trip costs and hours worked by the crew. As a result, more than 200 lbs. per DAS may be required to compensate the vessel owner and the crew for the increase in trip expenses and crew time. Currently, the allowance for observer coverage is 300 lbs. per DAS when an observer is on board.

Table 132 to Table 135 shows the affect of the various allowance rates on crew and vessel incomes based on the LPUE and price estimates for 2004-2007 shown in Table 132. It was assumed that the observer costs deducted off the top from the trip revenue, and a then a lay system of 60/40 is applied to pay for the crew. Specifically, it was assumed that crew will get 60% of the gross revenue (net of observer costs), but will pay for the trip costs such as food, fuel, ice, oil and water. In addition, it was assumed that the trip costs per DAS will amount to about \$950 per DAS, and total operating expenses including trip and other expenses such as maintenance and repair will be about \$1,450 per DAS.⁵⁸ Vessel income is estimated as gross revenue minus observer costs, net income paid to crew and operating expenses.

The estimates show that percentage change in net vessel revenue due to observer coverage will be negative at 200 lb. observer coverage. The net vessel revenue per trip will increase, however, at the status quo observer coverage of 300 lb., or if more pounds were allowed for the compensation of observers. Similarly, the results show that percentage change in net crew income (net of observer costs and trip expenses) per trip will be negative if observer allowance was only 200 lbs. per DAS, but will increase slightly if observer allowance is 300 lb. or more per DAS. However, crew wages per hour will decline with the observer coverage even when the observer allowance is increased to 400 lbs. per DAS. It is actually not possible to keep the crew wages per hour at the same level as long as the crew pays in total for the trip expenses, since these costs increase with larger trip allowance for observer coverage. As mentioned above, however, the participants in the scallop fishery, including crew and vessel owners will benefit indirectly from the observer program through better management of the scallop resource and area access programs. These indirect economic benefits are expected to exceed the costs of observers, at least over the long-term.

⁵⁸ Only half-of-the estimated repair expenses and maintenance is included in the operating expenses, and the other half is included in the fixed-costs. Operating expenses is defined as those variable costs that change with the time spent for fishing including the steam time. All of these expenses are expressed in 2003 current dollars.

Table 132. Estimated LPUE and price

Scenarios with observer allowance	2004	2005	2006	2007
LPUE (landings per DAS in lbs.)				
Closed Area I	2,590	2,628	2,641	2,658
Closed Area II	3,180	3,237	3,258	3,246
Nantucket Lightship Area	2,656	2,758	2,836	2,850
Estimated price per pound of scallops (in current 2003 prices)	3.64	3.71	3.81	3.26

Table 133. Percentage change in net crew income per trip due to observer coverage

Scenarios with observer allowance	2004	2005	2006	2007
Observer allowance: 200 lb. per DAS				
Closed Area I	-0.18%	-0.14%	-0.10%	-0.36%
Closed Area II	-0.11%	-0.08%	-0.05%	-0.25%
Nantucket Lightship Area	-0.17%	-0.13%	-0.08%	-0.32%
Observer allowance: 300 lb. per DAS				
Closed Area I	0.45%	0.48%	0.51%	0.25%
Closed Area II	0.39%	0.41%	0.43%	0.24%
Nantucket Lightship Area	0.44%	0.46%	0.49%	0.25%
Observer allowance: 400 lb. per DAS				
Closed Area I	1.13%	1.15%	1.18%	0.90%
Closed Area II	0.92%	0.93%	0.95%	0.75%
Nantucket Lightship Area	1.10%	1.09%	1.10%	0.85%

Table 134. Percentage change in crew income per hour due to observer coverage

Scenarios with observer allowance	2004	2005	2006	2007
Observer allowance: 200 lb. per DAS				
Closed Area I	-8.36%	-8.01%	-7.72%	-9.35%
Closed Area II	-6.65%	-6.36%	-6.13%	-7.44%
Nantucket Lightship Area	-8.13%	-7.59%	-7.13%	-8.63%
Observer allowance: 300 lb. per DAS				
Closed Area I	-7.58%	-7.26%	-6.97%	-8.59%
Closed Area II	-6.14%	-5.87%	-5.65%	-6.94%
Nantucket Lightship Area	-7.39%	-6.91%	-6.49%	-7.97%
Observer allowance: 400 lb. per DAS				
Closed Area I	-6.54%	-6.25%	-5.98%	-7.58%
Closed Area II	-5.46%	-5.21%	-5.00%	-6.27%
Nantucket Lightship Area	-6.40%	-6.00%	-5.63%	-7.10%

Table 135. Percentage change in net vessel revenue due to observer coverage

Scenarios with observer allowance	2004	2005	2006	2007
Observer allowance: 200 lb. per DAS				
Closed Area I	-0.81%	-0.58%	-0.33%	-1.95%
Closed Area II	-0.49%	-0.31%	-0.12%	-1.38%
Nantucket Lightship Area	-0.77%	-0.50%	-0.24%	-1.72%
Observer allowance: 300 lb. per DAS				
Closed Area I	3.57%	3.74%	3.97%	2.28%
Closed Area II	2.99%	3.11%	3.28%	2.01%
Nantucket Lightship Area	3.49%	3.58%	3.72%	2.18%
Observer allowance: 400 lb. per DAS				
Closed Area I	8.29%	8.38%	8.59%	6.83%
Closed Area II	6.69%	6.73%	6.88%	5.60%
Nantucket Lightship Area	8.07%	7.96%	7.96%	6.37%

6.2.8.5 Social Impacts

One alternative maintains the status quo, continuing in direct benefits to the industry that observers engender (e.g. enhanced perception of regulatory compliance). Other options would increase those indirect benefits while increasing indirect costs through reducing scallop TAC-revenue available to fishermen.

6.2.9 Enforcement provisions (Section 4.2.9)

6.2.9.1 Biological Impacts

Improved enforcement will have indirect benefits to the scallop and groundfish resource, because it will enhance compliance with the FMP's management measures. No direct impacts will result from these alternatives, however.

6.2.9.2 Habitat Impacts

Improved enforcement will have indirect habitat benefits but no direct habitat impacts will result from these alternatives.

6.2.9.3 Impacts of Management Measures on Endangered and Other Protected Species

Improved enforcement will have indirect benefits for protected species conservation but no direct habitat impacts will result from these alternatives.

6.2.9.4 Economic Impacts

Enforcement provisions are expected to improve overall management of the scallop resource and thus, indirectly increase economic benefits. Incorporation of an activity code into the VMS programming will indicate when a scallop vessel is on a closed area trip, and will enable law enforcement to quickly check if the vessel is authorized to be in the Nantucket Lightship Area, Closed Area I, or Closed Area II.

To simplify administration, NMFS may require email notification of a closed area trip prior to leaving the dock, which is estimated to cost about 79 cents per VMS e-mail message.

The prohibition of fishing scallop fishing on closed area trips outside of closed areas would prevent the transfer of scallops at sea, thereby violations of the scallop possession limit in the access areas. The increased polling frequency will similarly benefit the scallop fishery through enhanced monitoring in order to catch violators when fishing in the groundfish closed areas. The cost associated with the increase in polling frequency represents a cost at \$0.50 per poll, which is minimal compared to the expected benefits from this measure. Improved compliance through these enforcement procedures will reduce the risks of high bycatch, premature closures of the Georges Bank groundfish areas and will help to prevent the fishery from exceeding the scallop TAC. The indirect economic benefits from enhanced management of area rotation and access areas are expected to outweigh the costs associated with the administration of these measures.

6.2.9.5 Social Impacts

Alternatives to enhance enforcement monitoring would indirectly provide positive benefits to the industry, through for example, enhanced perception of regulatory compliance, and enhanced management capabilities. It comes with the social costs from additional enforcement provisions: extra paperwork, extra work, and the perception of being constantly watched.

6.2.10 Reporting requirements (Section 4.2.10)

6.2.10.1 Biological Impacts

Better data collection will provide better information with which to manage the fishery, therefore having an indirect positive impact on the scallop resource and fishery.

6.2.10.2 Habitat Impacts

Information on a tow-by-tow basis may have indirect benefits to habitat as it could assist in better habitat assessment information.

6.2.10.3 Impacts of Management Measures on Endangered and Other Protected Species

Information on a tow-by-tow basis may have indirect benefits for conservation of protected species as it could assist in better assessment of interactions with protected species or development of new solutions.

6.2.10.4 Economic Impacts

Framework 16 proposed measures include a requirement to have a VMS onboard for all scallop vessels that fish in the re-opened closed areas, including the general category vessels. Currently all full and part-time vessels are required to have a VMS onboard, and therefore, they will not be impacted by these measures. Similarly, all limited access vessels were required to have a VMS when scallop fishing in the controlled access areas. As a result, the vessels that accessed these areas in the past or currently fish in them already have a VMS and may not be impacted by this requirement.

There were about 20 occasional limited access permits during the fishing years 2000-2001, and about 10 in 2002 (Table 154). Since none of these vessels have any recorded trips to the controlled access areas during these years, they will be affected by the VMS requirement if they choose to fish in those areas. In addition, 8 out of 10 of these vessels were trawls according to the 2003 permit data, and thus will also be impacted by the requirement to use dredge in the Georges Bank groundfish areas as proposed by this Framework (Section 6.2.4.4). The actual numbers of occasional vessels that will be impacted by these requirements are unknown, however, because there were only 3 vessels in this category identified as active during the fishing year 2002. Nevertheless, fishing in the Georges Bank groundfish areas could be costly for most of these occasional trawl vessels, because they will need to install a dredge and a VMS to access them. On the other hand, occasional vessels will be allocated only one controlled access area trip during 2004-2007, and they can take this trip in any access area including Hudson Canyon, where they are allowed to fish with scallop trawls. This flexibility is expected to mitigate to some extent the cost burden on these vessels from the reporting and gear requirements.

In summary, occasional vessels and vessels with the general category permits will be impacted by the VMS requirement. According to the recent estimates, a VMS unit sells approximately for \$6,000, and monthly messaging costs average \$125-\$150.⁵⁹ If equipment cost is amortized over 4 years, the average VMS costs per year including the monthly message costs are estimated to be \$3,500. Given that the occasional vessels will be allocated one trip to the controlled access areas with a possession limit of 10,500 lb. in 2004 and 7,500 lb. in 2005, the revenues from these trips, the revenues from these trips will be about \$41,000 in 2004 and about \$29,000 in 2005, far exceeding the VMS costs. The impact of these requirements on general category vessels is examined in Section 6.2.13.4 in combination with the proposed measure, which allows access to these vessels.

In addition to the information that NMFS currently requires scallop vessels to submit on Vessel Trip Reports (VTR), the Regional Administrator is encouraged to require vessels on closed area trips to report the more descriptive information at a greater geographic scale. Additional VTR information on a tow-by-tow basis would improve habitat assessment information and would enable the Council to fine tune access programs in future framework adjustments to minimize bycatch. As a result, these reporting requirements will have indirect economic benefits through improved management of the scallop resource and are expected to outweigh the compliance costs.

6.2.10.5 Social Impacts

Alternatives to improved fishery monitoring through better reporting would indirectly provide positive benefits to the industry, through for example, enhanced perception of regulatory compliance, and enhanced management capabilities. It comes with the social costs from additional enforcement provisions: extra paperwork, extra work, and the perception of being constantly watched.

6.2.11 Mechanical Rotation Alternatives with Controlled Access Trip and DAS Allocations for Limited Access Scallop Vessels (Section 4.2.11)

Two mechanical rotation plans are proposed for controlled access. Alternative 1 (Section 4.2.11.1) would allow access in the order described and analyzed in Amendment 10, while Alternative 2 (Section 4.2.11.2) would allow access to two of the three areas each year, advancing access to Closed Area II and postponing access to Closed Area I.

⁵⁹ Information is provided by Todd Dubois and Linda Galvin from NMFS Enforcement Division in New Bedford. The same department is also in the process of testing a new VMS unit, which may have reduced equipment costs.

6.2.11.1 Biological Impacts

6.2.11.1.1 Projection results and comparison of access alternatives to no access

Although the framework adjustment focuses on access to the Georges Bank areas in 2004-2007, ten-year projections were performed to examine the effects on the scallop resource and fishery, in both the short-term (2004-2007) and the longer term (2004-2013). Two projections were made assuming controlled scallop fishing access to Closed Area I, Closed Area II, and the Nantucket Lightship Area, according to the two rotation alternatives considered here. Both were compared to No Action (i.e. the amount of fishing effort needed to achieve a resource wide fishing mortality rate of 0.2 without access to the groundfish closed areas) and No Action with a cap of 24,000 fleet DAS. The PDT prepared the 24,000 DAS scenario for comparison, because over the long term, it would maximize yield from the open fishing areas if there were no access, consistent with Amendment 10 goals.

Average biomass for the scallop resource is expected to rise in all alternatives through 2006 (see figure below), due largely to the above average recruitment in recent years. Small scallops in the Mid-Atlantic region during 2003 were among the highest on record. Through 2007, total scallop biomass is projected to be lower with access, due to the added catch removed from the resource. After that, biomass is expected to be higher than No Action and DAS allocations without access. Although No Action is projected to have less total biomass after 2007, all alternatives are above the target biomass currently associated with B_{MSY} . Amendment 10 estimated the biomass target, associated with B_{max} , to be 5.6 kg/tow, or 5,600 g/tow. **The new projections for all scenarios (with and without access, including No Action) in this analysis remain well above the target biomass level for the entire time series through 2013.**

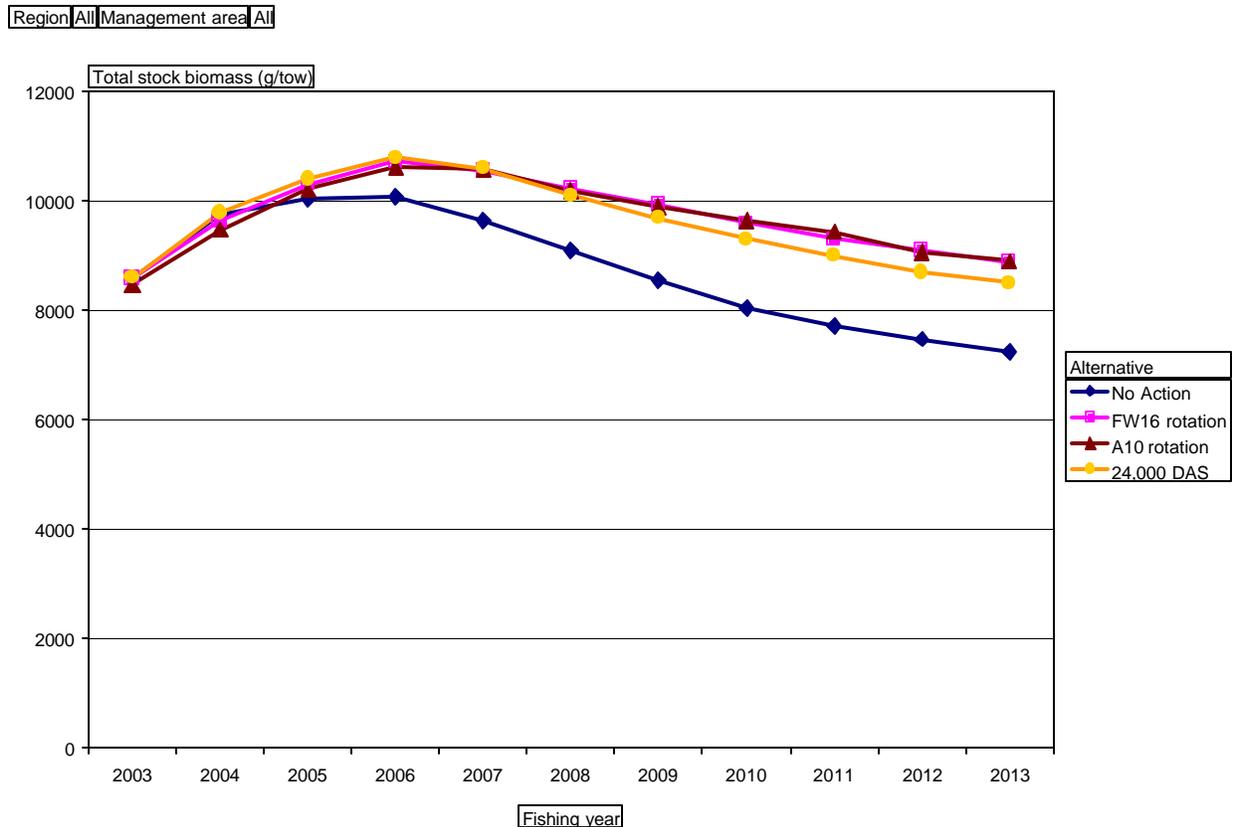


Figure 23. Comparison of projected total biomass index for access vs. no action and a 24,000 DAS cap.

Total landings for all the alternatives is projected to vary between 20,000 and 32,000 mt (44 to 71 million lbs., see the figure below). And in all alternatives, the largest scallops (U10⁶⁰) are projected to make up a greater proportion of total landings than they did during 2003.

In general, the proposed allocations with access is projected to provide more stable landings, with a greater proportion of the landings from more valuable U10 and 10/20 count scallops. The projection results for the Amendment 10 rotation alternative (Section 4.2.11.1) and the proposed Framework 16 rotation alternative (Section 4.2.11.2) are very similar to each other.

For the No Action alternative, landings are expected to be about 22,000 mt in 2004, rising to almost 30,000 mt in 2007 (when the Elephant Trunk area is expected to re-open), and then decline to 20,000 mt in 2013. Large U10 scallop landings are projected to rise through 2010 to about 12,500 mt, and then decline quickly because of the high fishing mortality in open areas. Allocating 24,000 DAS each year is projected to produce the same pattern, but produce more stable landings, around 22,000 to 28,000 mt. By 2013, an allocation of 24,000 DAS would of course cause a greater share of the catch from larger scallops, producing higher yield-per-recruit than under the No Action alternative.

Access to the proposed access areas (see 'FW16 rotation' and 'A10 rotation' in the figure below) is projected to produce higher total landings in 2004, about 26,000 mt, vs. 22,000 mt for No Action. The landings for No Action is a slight decline from the 23,000 mt landings that are estimated for 2003, but either alternative with access is estimated to cause landings to increase to 26,000 mt in 2004.

⁶⁰ "U10" means that the scallops average less than 10 meats per pound.

Over the longer term, the increasing open area DAS allocations that Amendment 10 allows without access are projected to produce higher landings than the allocations with access. With access, a greater portion of the landings comes from more valuable U10 scallops, however, which increase to around 12,500 mt for the foreseeable future.

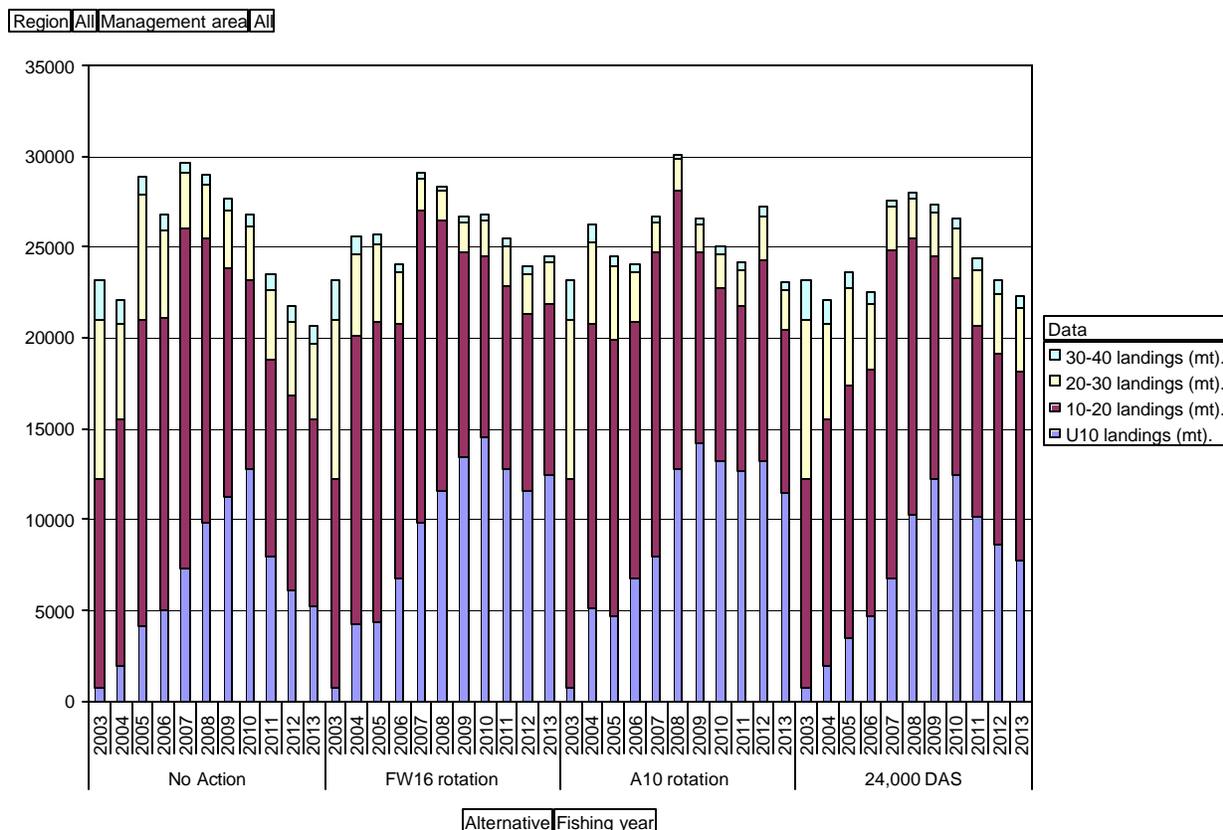


Figure 24. Comparison of projected landings by meat count category for access vs. no action and a 24,000 DAS cap

The proposed access alternatives allow the FMP to reduce fishing effort while achieving the annual fishing mortality targets (see figure below). The allowable DAS use for all alternatives (except for the constant 24,000 DAS scenario) were estimated to achieve a resource-wide fishing mortality rate of 0.20, consistent with the overfishing definition and Amendment 10. Fishing effort, measured in days-at-sea, with access to the Georges Bank closed areas would decline to around 24,000 DAS in 2004, and then vary between 20,000 and 24,000 DAS thereafter. There are few differences between rotation alternatives, except that the DAS allocations for the ‘A10 rotation’ rise in 2004, 2008, and 2012 due to a 0.4 fishing mortality target in Closed Area I and the Nantucket Lightship Area for the Amendment 10 rotation alternative.

In contrast, No Action (no access) would allow fishing effort, measured in DAS, to rise from 24,000 DAS in 2004 to over 35,000 DAS, actually higher than the amount of DAS that the fleet fished since 1998! The DAS allocations decline somewhat in 2007 and thereafter, accounting for the available scallop biomass in the re-opening Elephant Trunk Area. Without any further management action, No Action DAS use would average around 27,000 to 28,000, slightly less than the DAS use recorded in the 2003 fishing year.

The No Action alternative results are actually more optimistic than they had been in the Amendment 10 analysis, reflecting the large Mid-Atlantic scallop year class that were observed in the 2003 surveys. Previous Amendment 10 projections suggested that a 0.2 fishing mortality target would require 40,000 to 50,000 DAS, while achieving less landings than the updated projections indicate that are now possible. In the short-term (2004-2007), the Amendment 10 projections indicated that achieving a 0.2 fishing mortality target without access would produce 17,000 mt (37 million lbs.) per year from the open areas and the Hudson Canyon Area. The updated projections indicate that 27,000 mt (60 million lbs.) landings from the open areas and the Hudson Canyon Area are achievable with No Action and a F=0.2 fishing mortality target.

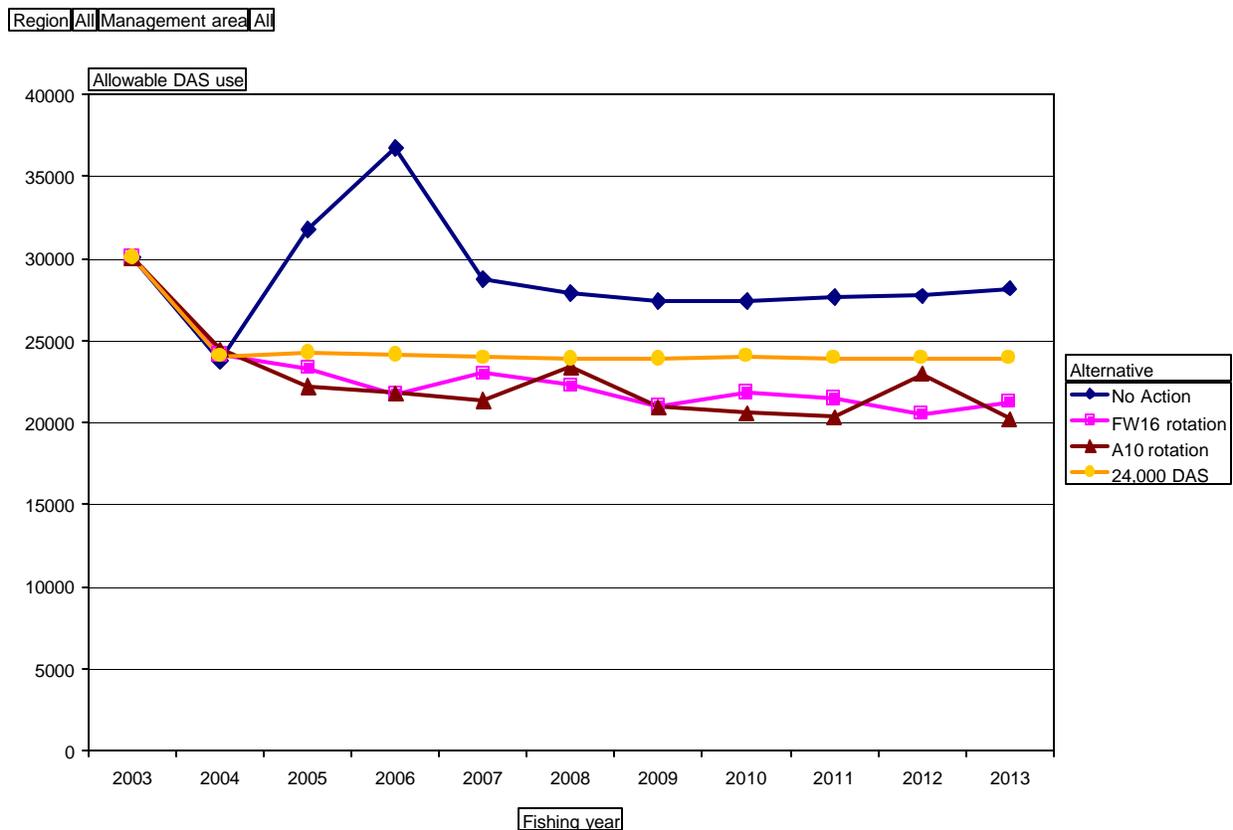


Figure 25. Comparison of projected allowable DAS use to achieve annual fishing mortality targets for access vs. no action and a 24,000 DAS cap

Catch per unit effort (contributing to profitability and minimizing bycatch and habitat impacts), or scallop landings per DAS (LPUE), is a function of scallop biomass and the size of scallops available in the catch. As scallop biomass increases, the amount of scallops caught per hour fished increases. As it exceeds the crew's shucking capacity (about 50,000 scallops per day for a vessel with seven crewmen), the LPUE is controlled more by the size of scallops. Larger scallops individually take a bit longer to shuck than small scallops, but the weight of the scallop meats that can be shucked is more than compensated by the higher meat weight. Since the crew can shuck more weight of large scallops (increasing the vessel and crew profits), this effect also serves as an incentive to target large scallops and reduce fishing effort and mortality on smaller scallops when the vessel's scallop catches exceed the daily shucking capacity of the crew.

The LPUE is highest for alternatives with access to the Georges Bank controlled access areas (see figure below). LPUE is projected to rise from about 1,700 lbs./day in 2003 to nearly 2,400 lbs./day in 2004 and rising even further to 2,500 – 2,800 lbs./day beyond 2007. The rotation order does not appreciably change these LPUE projections.

In contrast, fishing effort without access is projected to produce average daily catches (LPUE) of 2,000 lbs./day in 2004, declining to 1,600 lbs./day in 2006, before rising to around 2,300 lbs./day in 2007 – 2010 from the effects of the 2003 year class, opening Hudson Canyon Area to normal scallop fishing, and the planned re-opening of the Elephant Trunk area. After 2010, the LPUE is projected to decline to 1,600 lbs./day from the effect of high fishing effort on available scallops in the open fishing areas.

A 24,000 DAS limit would produce intermediate catch rates between 2,000 and 2,500 mt, declining to 2,000 mt as the 2003 year class is removed from the population.

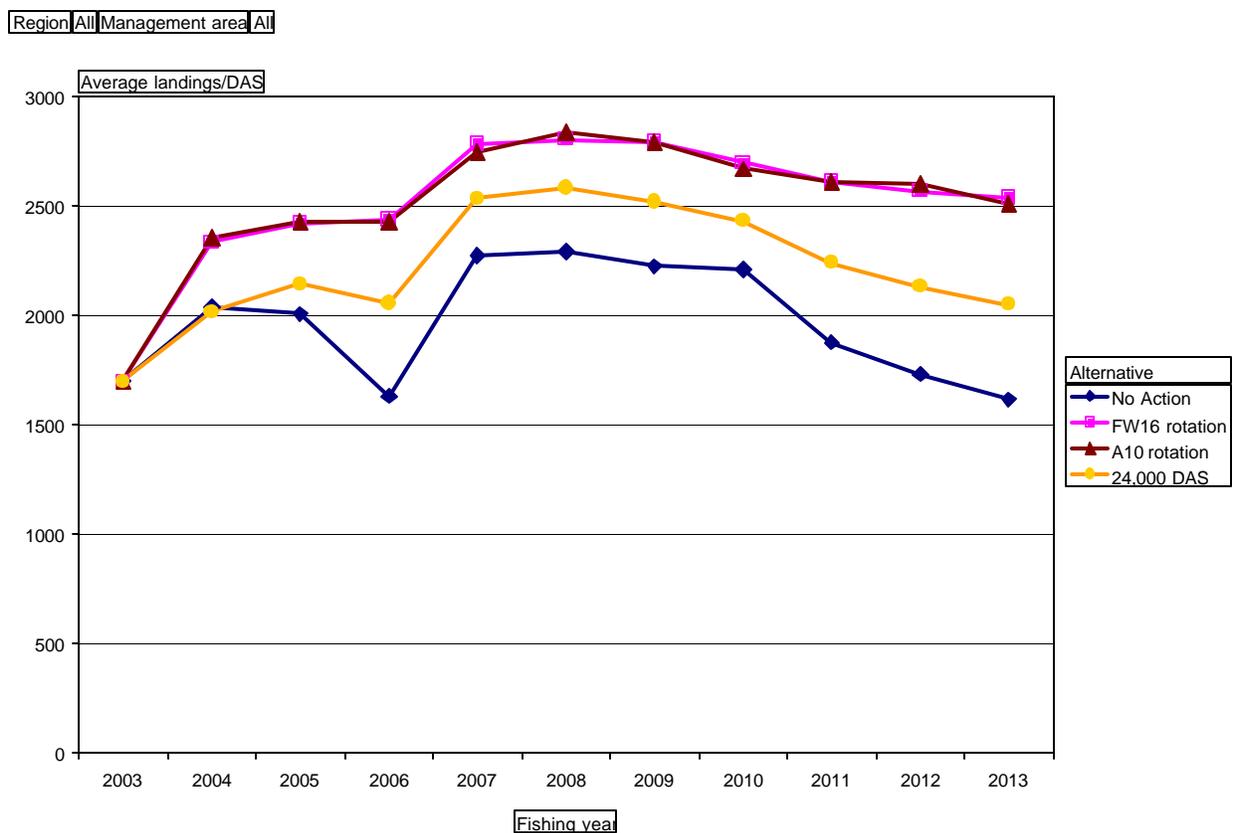


Figure 26. Comparison of projected landings per used DAS for access vs. no action and a 24,000 DAS cap.

Total area swept is a measure of fishing intensity and is calculated from the total amount of DAS use and the amount that the projected catch rates exceed the vessel's shucking capacity. This value, calculated in nm^2 , is the time fished multiplied by the dredge width, and summed as if the tows were laid end to end and side by side. Of course, fishing is not conducted this way and scallop fishing effort is highly concentrated over areas with the highest scallop catch rates, as was shown in the Amendment 10 FSEIS using VMS position data. Nonetheless, lower biomass and catches of smaller scallops cause more

bottom contact per DAS which is more widely dispersed, increasing bycatch and potential impacts on EFH.

With access, total area swept is projected to decline from about 4,600 nm² in 2003 to about 3,500 nm² in 2004-2006, before declining to only 2,000 nm² in 2007 and slowly rising to 3,200 nm² over the 10 year period. Differences in rotation order are predicted to cause very minor differences in total bottom contact.

In contrast, the No Action alternative (i.e. without access to the Georges Bank closed areas) is projected to cause total area swept to shoot up to over 10,000 nm² by 2006, dropping to 4,500 nm² in 2007 when the Elephant Trunk Area is slated to re-open, and then increase again to 8,000 nm² over the 10 year period.

With the No Action alternative, the total area swept is only expected to decline to slightly less than the 2003 amount during 2007 and 2008, following a re-opening of the Elephant Trunk area, a closed rotation area if Amendment 10 is approved.

Capping fishing effort at 24,000 DAS, similar to actions that might be considered in future framework adjustments to achieve optimum yield if no access is allowed in this framework, would produce about the same total area swept as in 2003, but it would also benefit from the Elephant Trunk Area closure and scallop biomass when it is expected to re-open in 2007. By capping the DAS use to 24,000 DAS, total area swept would rise to 5,600 nm² in 2006, then decline to 2,700 nm² in 2007 when fishing would be allowed in a re-opened Elephant Trunk Area. Total bottom contact (measured as area swept) is therefore less for either rotation alternative with access to the Georges Bank closed areas, than without access, even if the open area DAS are capped at a level to produce sustainable landings from the scallop resource.

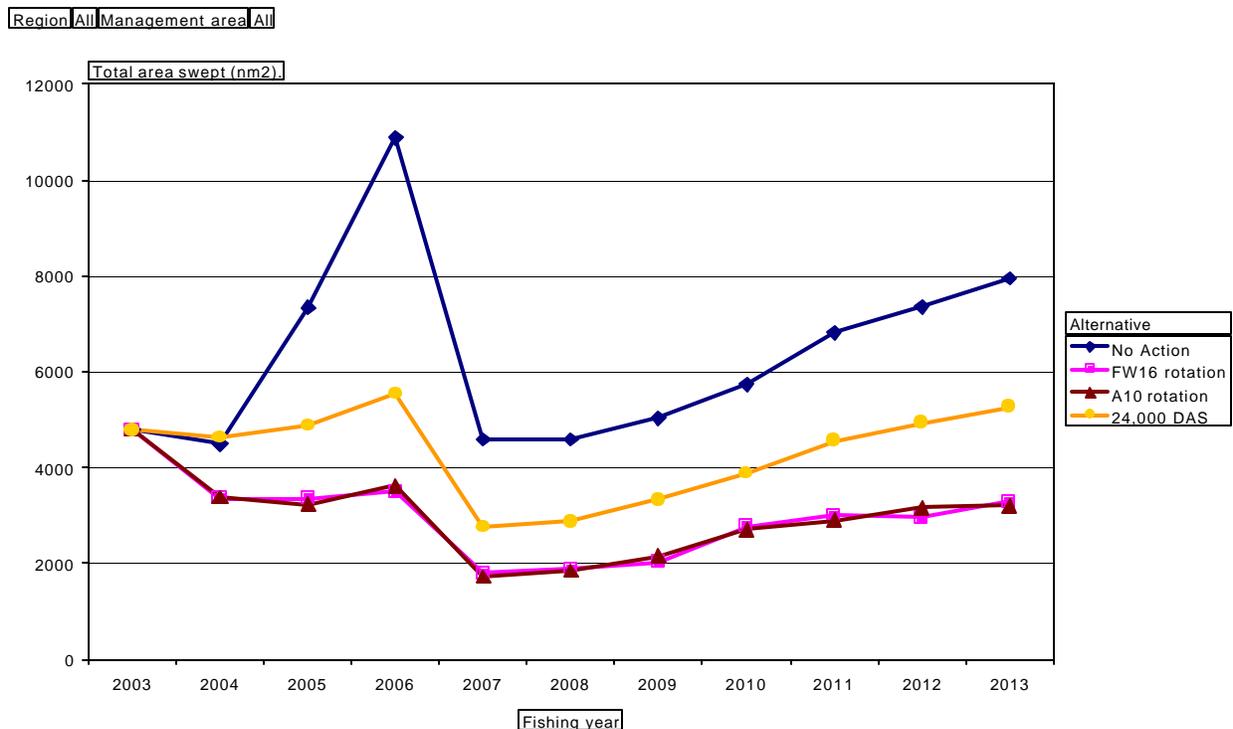


Figure 27. Comparison of projected total area swept (nm²) for access vs. no action and a 24,000 DAS cap.

6.2.11.1.2 Projection assumptions and methods

The Framework 16 simulation model is the same model that was used in Amendment 10, with the minor modifications listed below. Various versions of this model have been used since 1999 (Frameworks 12/13), which have provided accurate forecasts of scallop landings and abundance.

Changes from the Amendment 10 model are:

- (1) Observer and dealer data indicate that few scallops less than 90 mm shell height are being landed. For this reason, the cull size in the Framework 16 simulations was increased to 90 mm.
- (2) In all runs, 3.5" rings were assumed to be used until the 2004 survey, after which 4" rings were assumed throughout.
- (3) The scallop grounds were divided into nine subregions on Georges Bank and five in the Mid-Atlantic. Six of the subregions on Georges Bank are in the groundfish closed areas, with two subregions for each of the three closed areas. Each closed area was divided into the proposed access area (equivalent to the Framework 13 access areas in the Nantucket Lightship closed area and in Georges Bank Closed Area II, and to the portion of Closed Area I that is outside the JAR habitat closure contained in the multispecies Amendment 13), and the areas outside these access areas. The other three areas on Georges Bank are the Great South Channel, the Southeast Part, and the Northern Edge and Peak. The areas in the Mid-Atlantic are Virginia Beach, the portion of Delmarva outside the new "Elephant trunk" closure, the Elephant Trunk Closure Area, the portion of the Hudson Canyon Access Area not in the Elephant Trunk Area, and the New York Bight. In all runs, controlled access to the Hudson Canyon Access Area was assumed to continue through the 2005-6 fishing year, with fishing mortalities set at $F = 0.4$ in 2004-5, and $F = 0.48$ in 2005-6. The Elephant Trunk area was assumed to be closed for three years, from 2004-5 through the 2007-8 fishing years, because model runs indicate that is when the growth rate in this area will remain above the 0.15 threshold set in Amendment 10. This area is assumed then to be under controlled access for the fishing years 2008-9 through 2010-11, with ramped fishing mortality rates of $F = 0.32$, $F = 0.4$, and $F = 0.48$.
- (4) The estimated stochastic recruitment patterns were updated through the 2003 survey, so that they are now based on the 22-year time series between 1982-2003. The model was initialized to the size-frequencies based on the 2003 NMFS sea scallop survey, and averaged over 400 runs with different recruitment patterns.

Four sets of simulations were run, two without access to the groundfish closed areas and two with access. One of the no access scenarios is classified as "no action"; this is what would occur if no new framework or amendment is enacted following implementation of Amendment 10. According to the Amendment 10 DAS schedule, 62 open days would be allocated to full-time vessels 2004, followed by 117 in 2005, and 152 in 2006 and future years. In addition, each full-time vessel would be granted four trips to the Hudson Canyon Access Area in 2004 and three trips in 2005, with an 18,000 lbs. scallop possession limit. The assumed allocations for 2005 and future years correspond to a total aggregate of about 35,000 DAS.

In some years, this DAS level was projected to induce a spatially averaged fishing mortality greater than the $F = 0.2$ annual mortality target. In these cases, the projection model reduced the assumed DAS allocation to correspond with plan's annual mortality target. No new closures were assumed under

either of the no access alternatives, but no fishing was assumed in the Mid-Atlantic Elephant Trunk Area from 2004-2007 slated for closure when implementation of Amendment 10 occurs.

Because the “no action” alternative is predicted to cause unsustainable landings from open fishing areas, the PDT analyzed a second no access alternative, where the aggregate DAS would be held constant at 2004 levels. This corresponds to about 24,000 aggregate DAS fished⁶¹, and can be considered a “status quo” alternative (i.e. a proxy for the effort that might be allocated under the Amendment 10 framework adjustment process to produce optimum yield).

One projection (‘FW16 rotation’) where there is access to the groundfish closed areas, the fishing mortality target is $F=0.2$ in the access portions of two out of the three closed areas each year, with the rotation schedule being: Nantucket Lightship Area and Closed Area II in 2004; Closed Area I and Closed Area II in 2005; Nantucket Lightship Area and Closed Area I in 2006, with this three year rotation repeating itself in the years thereafter.

As the time-averaged fishing mortality in the access portions of the closed area will be 0.133, less than the F_{MSY} value of 0.24, these areas will be somewhat underfished, with respect to the fishing mortality that produces MSY. While this will result in slightly less scallop landings than fishing at F_{MSY} , it will also induce considerably less bycatch and total bottom contact than an MSY strategy would cause.

6.2.11.1.3 Allocations

The following allocation estimates were calculated assuming the following TAC set-asides for access to the Georges Bank closed areas: 2% for research and scallop surveys; 1% for observers; and 2% for trips by general category vessels. The total number of trips, associated with the adjusted TACs were distributed according to the status quo methods in Amendment 10, rounding up or down to the nearest whole trip per vessel for the number of vessels holding an active limited access scallop permit during the most recent fishing year. For part-time and occasional vessels, the total number of controlled access trips were rounded down to the nearest whole number, but was never less than one trip per year.

As a result of the above procedure, the total landings if all trips are taken and including the TAC set-asides may exceed the TAC due to this rounding. Some vessels will not take their full compliment of trips however and actual landings with the estimated DAS allocations are unlikely to exceed the scallop TACs in practice.

Although the scallop mortality would be controlled by a TAC, the allocations, shown in the tables below will promote orderly management of the fishery, giving vessels time to fish in ways that optimize yield. A vessel on a controlled access trip, would be charged 12 DAS to harvest 18,000 lbs. In all cases, the trip length including steam time to and from port is substantially shorter than 12 DAS for the average vessel. In response, vessels would have the flexibility to carry fewer than seven crew members (increasing the profits per person on the trip), seek the largest and valuable scallops even though the catch per tow might be less than on smaller scallops (decreasing scallop mortality associated with the TACs), and fish in areas with less bycatch and hard bottom (which otherwise increases fishing costs and threatens early closure of the access program due to yellowtail flounder bycatches).

In 2004 with access boundary alternative 4, the Amendment 10 rotation alternative would allow an allocation of four controlled access trips for the Georges Bank areas (Table 136), in addition to the four Hudson Canyon Area trips that were allocated in Amendment 10. Reducing the mortality targets and

⁶¹ DAS allocations are higher because of incomplete use of allocated days, inactive permits and Confirmation of Permit Histories, and tradeoffs for DAS charges for shorter trips fished in controlled access areas.

changing the order of rotation (allowing earlier access to Closed Area II while postponing access to Closed Area I), would reduce the number of full-time trips for the Georges Bank areas to three. Either rotation strategy would allow the fishery to take nearly all of the combined TACs in 2004.

In 2005, both rotation strategies give the same controlled access trip allocations with access boundary alternative 4, two full-time trips in addition to the three Hudson Canyon Area trips (Table 136). Like 2004, these allocations would allow the fleet to land nearly all of the combined TACs. The Framework 16 rotation alternative would allow the allocation of two full-time trips in 2006 and 2007, instead of one for the Amendment 10 rotation alternative (Table 137). In 2006, the controlled access trip allocations would allow the fleet to land 104% of the combined TACs, but only 65 percent for the Amendment 10 rotation alternative. This occurs because under the Amendment 10 rotation alternative, the maximum number of trips in Closed Area I rounds down to zero because less than 0.5 trips would take the TAC in Closed Area I. The allocations are higher (two vs. one full-time trip) for the Framework 16 rotation alternative as well, but both alternatives would allow the fleet to land 78-79% of the combined TACs if the fleet takes all allocated trips.

Table 136. 2004 and 2005 controlled access allocations for Amendment 10 rotation (Section 4.2.11.1) and access alternative 4 (Section 4.2.2.4).

	Rotation alternative			
	2004		2005	
	A10	FW16	A10	FW16
Maximum trips allocated				
Hudson Canyon Area	4	4	3	3
Closed Area I	1	0	0	1
Nantucket Lightship Area	3	1	0	0
Closed Area II	0	2	2	1
Maximum days allocated and charged				
Hudson Canyon Area	48	48	36	36
Closed Area I	12	0	0	12
Nantucket Lightship Area	36	12	0	0
Closed Area II	0	24	24	12
Controlled access days	96	84	60	60
Maximum controlled access trips taken				
Full-time	8	7	5	5
Part-time	3	2	2	2
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area	108.4%	105.9%	101.5%	101.5%
Closed Area I	105.9%			162.1%
Nantucket Lightship Area	111.2%	68.1%		
Closed Area II		124.6%	112.4%	68.3%
Combined	103.7%	97.5%	101.4%	95.0%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area	7.5	7.5	7.5	7.5
Closed Area I	7.0			6.8
Nantucket Lightship Area	5.7	5.7		
Closed Area II		6.8	6.5	6.5
Days charged, but not used (	42.1	34.8	24.5	24.1
Total expected DAS use				
Hudson Canyon Area	8,168	8,098	6,146	6,146
Closed Area I	1,894	-	-	1,873
Nantucket Lightship Area	4,628	1,529	-	-
Closed Area II	-	3,662	3,569	1,785
Total DAS used	14,690	13,289	9,715	9,803
Expected total trips	2,180	1,891	1,367	1,367
Hudson Canyon Area	1,090	1,081	820	820
Closed Area I	273	-	-	273
Nantucket Lightship Area	818	270	-	-
Closed Area II	-	540	547	273

Table 137. 2006 and 2007 controlled access allocations for Amendment 10 rotation (Section 4.2.11.1) and access alternative 4 (Section 4.2.2.4).

	Rotation alternative			
	2006 A10	FW16	2007 A10	FW16
Maximum trips allocated				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	1	0	0
Nantucket Lightship Area	0	1	0	1
Closed Area II	1	0	1	1
Maximum days allocated and charged				
Hudson Canyon Area	0	0	0	0
Closed Area I	0	12	0	0
Nantucket Lightship Area	0	12	0	12
Closed Area II	12	0	12	12
Controlled access days	12	24	12	24
Maximum controlled access trips taken				
Full-time	1	2	1	2
Part-time	1	1	1	1
Occasional	1	1	1	1
Maximum possession limit				
Full-time	18,000	18,000	18,000	18,000
Part-time	18,000	18,000	18,000	18,000
Occasional	18,000	18,000	18,000	18,000
Potential percent of TAC landed				
Hudson Canyon Area				
Closed Area I		186.1%		
Nantucket Lightship Area		77.3%		92.3%
Closed Area II	65.4%		77.5%	76.0%
Combined	65.4%	103.6%	77.5%	79.1%
Average days used per trip and annual day-at-sea tradeoff per full-time vessel				
Hudson Canyon Area				
Closed Area I		6.8		
Nantucket Lightship Area		5.5		5.5
Closed Area II	6.3		6.3	6.3
Days charged, but not used (	5.7	11.7	5.7	12.1
Total expected DAS use				
Hudson Canyon Area	-	-	-	-
Closed Area I	-	1,888	-	-
Nantucket Lightship Area	-	1,531	-	1,536
Closed Area II	1,853	-	1,844	1,750
Total DAS used	1,853	3,418	1,844	3,286
Expected total trips	292	554	292	554
Hudson Canyon Area	-	-	-	-
Closed Area I	-	277	-	-
Nantucket Lightship Area	-	277	-	277
Closed Area II	292	-	292	277

6.2.11.2 Habitat Impacts

The Amendment 10 rotation strategy allows for fishing in the access areas within Closed Area I and Nantucket Lightship Area during 2004 followed by three years in which these areas are not accessible by the scallop fleet. The three-year fallow period will allow for these areas to recover significantly from habitat impacts that occur in 2004. However, Closed Area II access areas will be fished for three successive years starting in 2005. Therefore, absent any other fishing by bottom-tending mobile gears, in general, this rotation order will be more beneficial to the protection of EFH in the Nantucket Lightship Area and Closed Area I than in the Closed Area II.

The alternative mechanical rotation strategy, proposed by this framework adjustment, allows fishing in the three access areas on a rotating one-year closed two-years open basis so that two access areas are open every year. Under this option, each area would have only one year to recover from two years of scallop dredging, instead of the three years built into the Amendment 10 rotation strategy. Allowing a disturbed area to lie fallow for only a single year is expected to reduce habitat benefits below what would be expected under the status quo

6.2.11.3 Impacts of Management Measures on Endangered and Other Protected Species

The Amendment 10 mechanical rotation alternatives would allow scallop fishing effort to occur on Georges Bank and reduce effort in the other areas where turtles are more abundant --- potentially reducing negative impacts to protected species. The precise cycle adopted should not affect turtles unless access overall is reduced and effort shifts southward and poses the same potential risks as discussed above.

6.2.11.4 Economic Impacts

Impacts of Rotation Strategies:

The economic impacts of the mechanical alternatives including the Amendment 10 mechanical rotation and alternative rotation strategy proposed by Framework 16 are examined in Section 6.2.11.4 relative to the no action and status quo alternatives and in Section 6.2.2.4 for each access boundary option (Table 57 to Table 63, Table 82, and Table 83). Overall aggregated economic impacts of these alternatives are similar for access alternatives 1, 2 and 4, with largest economic benefits obtained for access alternative 2. Both Amendment 10 mechanical rotation and alternative rotation strategy (Framework 16 rotation) results in lowest economic benefits with access alternative 3.

The rotation strategy proposed by this Framework is an adjustment to the status quo in Amendment 10. Even though aggregate economic impacts are similar, Framework 16 rotation strategy minimizes the risk of high yellowtail bycatch in the Nantucket Lightship Area with a 0.2 fishing mortality rate compared to the access with the Amendment 10 mechanical rotation at 0.4 fishing mortality rate. As a result, alternative rotation strategy reduces the likelihood of significant scallop revenue loss and reduction in total net benefits from closure of access areas due to high of yellowtail bycatch before the scallop TAC is reached. For this reason, the economic impacts of this strategy could exceed the economic impacts of Amendment 10 mechanical rotation, although the extent of these impacts cannot be quantified. The economic benefits will be higher for this strategy also because it is expected to even out the annual allocations for the access areas, thus providing more stability to the vessel business operations.

Table 138 shows that, in general, alternative rotation strategy is estimated to result in slightly lower landings and revenues in year 2004, but higher landings, revenues and benefits in year 2007 as compared to Amendment 10 rotation option. In addition, the biological impact analysis shows that yellowtail flounder bycatch would be almost double of the 10% limit if the Nantucket Lightship Area (NLSA) were opened to scallop fishing with a 0.4 scallop mortality target in accordance with the Amendment 10 rotation schedule. These estimates indicate that it is improbable that the Nantucket Lightship Area would remain open long enough to take the scallop TAC if Amendment 10 rotation schedule were implemented. As a result, the economic benefits from access could fall below the levels shown in Table 138 for Amendment 10 rotation.

Table 138. Impacts of Rotation and access alternatives

Access alternatives	Rotation alternatives	2004	2005	2006	2007
Landings, million lb.					
Access alternative 1	A10 rotation	57.8	52.2	51.5	57.5
	Alternative rotation	55.4	54.1	52.4	63.2
Access alternative 2	A10 rotation	58.6	52.4	51.6	57.6
	Alternative rotation	55.8	54.4	52.8	63.5
Access alternative 3	A10 rotation	54.9	52.2	51.5	57.5
	Alternative rotation	55.4	52.2	50.8	63.2
Access alternative 4	A10 rotation	58.6	52.2	51.5	57.5
	Alternative rotation	55.4	54.1	52.4	63.2
Revenue, \$ million (in 1996 prices)					
Access alternative 1	A10 rotation	172.0	168.8	168.4	172.6
	Alternative rotation	170.7	170.1	169.1	174.5
Access alternative 2	A10 rotation	172.3	169.0	168.5	172.6
	Alternative rotation	170.9	170.3	169.4	174.6
Access alternative 3	A10 rotation	170.5	168.8	168.4	172.6
	Alternative rotation	170.7	168.8	167.8	174.5
Access alternative 4	A10 rotation	172.3	168.8	168.4	172.6
	Alternative rotation	170.7	170.1	169.1	174.5
Total benefits, \$ million (in 1996 prices)					
Access alternative 1	A10 rotation	265.2	247.2	244.6	268.5
	Alternative rotation	256.7	253.3	248.1	287.7
Access alternative 2	A10 rotation	267.9	247.8	245.0	268.8
	Alternative rotation	258.1	254.4	249.5	288.7
Access alternative 3	A10 rotation	255.5	247.2	244.6	268.5
	Alternative rotation	256.7	246.8	242.2	287.7
Access alternative 4	A10 rotation	267.9	247.2	244.6	268.5
	Alternative rotation	256.7	253.3	248.1	287.7

Impacts of Controlled Access Trip Allocations :

In accordance with these strategies, the limited access vessels are allocated controlled access area trips with varying possession limits according to their permit category. The full-time trips will be allocated 18,000 lbs. trips to the controlled access areas as proposed by Amendment 10. Framework 16 proposes no change to the possession limits and DAS trade-offs for full-time vessels from the levels set by Amendment 10. There are some proposed changes to the allocation system and possession trips for the part-time and occasional vessels, however, as examined in Section 6.2.12.4.

For the full-time vessels, the economic impacts of the area-specific DAS allocations, possession limits and associated 12 days-at-sea trade-off are within the range of impacts examined in Section 8.7.2.2 and Section 8.7.2.3 in the Amendment 10 FSEIS. There are some changes, however, in the number of trips allocated for each access area in Framework 16 based on the recent survey results for scallop catch and groundfish bycatch. The impacts of these allocations on landings, revenues, and total benefits were examined above in Table 138 assuming that the vessels will be able to take all the trips allocated to them for these areas, and there will be no early closures triggered by Groundfish TACs. The impacts of these allocations on operational costs, revenues and gross profits of the scallop fishery were also examined in Section 6.2.11.4 for various access boundary options and rotation strategies. The results showed that the proposed access with the access boundary option 4 and rotation strategy proposed by Framework 16 will have an insignificant impact on the fleet revenue, but will reduce average operating expenses by almost 28% per year during the 2004-2007 period. Consequently, the gross profits of the scallop fleet will increase by 18% during the same period.

Although, the results for the status quo Amendment 10 rotation are similar, there is more uncertainty under this option about how long the Georges Bank groundfish areas will remain open to scallop fishing. Table 139 shows the number of trips allocated to the controlled access areas for these two rotation alternatives and access boundaries.⁶² Because there are more trips (3 trips in 2004 for the proposed access boundary option 4) allocated for the NLSA for Amendment 10 rotation than for proposed Framework 16 rotation strategy, the likelihood for exceeding the yellowtail TACs is higher for the former option. The economic implications of this uncertainty and risk of exceeding the yellowtail TACs are discussed in Section 6.2.5.4. The percentage of scallop revenue from NLSA is estimated to be over 24% with Amendment 10 rotation, but about 13% in 2004 with the Framework 16 rotation (Table 122 and Table 123). Therefore, any premature closure of this area will have significantly more negative impacts on vessel gross profits with Amendment 10 rotation compared to the Framework 16 rotation strategy. Consequently, economic benefits from Framework 16 rotation are likely to be higher than estimated here and in Section 6.2.11.4 compared to Amendment 10 rotation.

Table 139. The number of allocated trips for full-time vessels to the controlled access areas

Year	Access Areas	Boundary Access Alternative 3		Boundary Access Alternative 4	
		Amendment 10 Rotation	Framework 16 Rotation	Amendment 10 Rotation	Framework 16 Rotation
2004	CAII		2		2
	CAI			1	
	NLS	2	1	3	1
	HC	4	4	4	4
	Total	6	7	8	7

⁶² Trip allocations are shown only for boundary alternatives 3 and 4, because the first alternative resulted in the smallest and the proposed boundary alternative 4 resulted in largest number of allocations. The number of trip allocations for boundary alternatives 1 and 2 are within the range shown for alternatives 3 and 4.

Year	Access Areas	Boundary Access Alternative 3		Boundary Access Alternative 4	
		Amendment 10 Rotation	Framework 16 Rotation	Amendment 10 Rotation	Framework 16 Rotation
2005	CAI		0		1
	CAII	2	1	2	1
	HC	3	3	3	3
	Total	5	4	5	5
2006	CAI		0		1
	CAII	1		1	
	NLS		1		1
	Total	1	1	1	2
2007	CAII	1	1	1	1
	NLS		1		1
	Total	1	2	1	2

The distributional impacts of area-specific DAS allocations were examined in Section 8.7.2.3 of Amendment 10, and the same analyses are also valid for the access options proposed by Framework 16. Although the proposed rotation and access are expected to benefit most vessels in the scallop fishery by increasing the productivity of the scallop resource, these benefits may not necessarily be equally distributed. Area specific DAS and trip allocations could have differential effects on fishing families and communities, on scallop vessels, and on processors and ports. The proximity of these entities to open and controlled access areas, as well as to the areas closed for fishing because of rotation and/or habitat protection, may result in differential impacts from proposed area rotation. These impacts may also vary according to the mobility of the vessels in accessing alternative fishing areas. Section 8.7.2.3 of Amendment 10 provided an empirical analysis of the vessels that could be impacted negatively from area-specific DAS allocations for the controlled access areas and indicated how the one-to-one exchange provision for the access allocations could mitigate some of these impacts. However, the proposed restrictions on the DAS exchange provisions for controlled access trips, specifically restricting these exchanges to the vessels in the same permit category will reduce the flexibility and opportunities for exchange for some vessels, especially for those in the part-time and occasional category as examined in Section 6.2.12.4. A discussion of the distributional impacts from area rotation, from alternative effort allocation and habitat closures, and from other measures included in Framework 16 is also provided in relevant social impact sections in Section 6.2 and in Section 8.8, Social Impact Assessment of Amendment 10.

6.2.11.5 Social Impacts

The alternative Framework 16 rotation strategy would generate those socially benefit impacts from the predicted more even yield stream and reduction of bycatch, such as more predictable fishing, and less stressful working conditions. Compared with the Amendment 10 rotation strategy, the somewhat greater predicted economic benefits (see economic analysis above) from the alternative strategy would also generate those social impacts that are derivative from economic improvements, such as improvement in the living standard for fishermen and so on.

6.2.12 Trip And DAS Allocations For Part-time And Occasional Vessels (Section 4.2.12)

Two alternatives are proposed for making controlled access trip and DAS allocations to part-time and occasional vessels. Alternative 1 (Section 4.2.12.1) would retain the current strategy that the Council adopted in Amendment 10, while Alternative 2 (Section 4.2.12.2) would adopt another strategy that has

different scallop possession limits so that the number of DAS and maximum scallop catch is exactly 40% and 1/12th of a full-time allocation, respectively.

6.2.12.1 Biological Impacts

The total number of trips in controlled access areas will change, but the total removals will remain the same under both allocation alternatives. No biological impacts on scallops, groundfish, or other species is expected from any alternative. There may, however, be a slight effect from the trading regulations. If vessels are allowed only to trade with vessels in the same limited access permit classification (full-time, part-time, and occasional), some vessels may find it more difficult to trade trips. This may result in a slight reduction in the number of trips actually taken in controlled access areas, which would reduce scallop and finfish mortality slightly.

6.2.12.2 Habitat Impacts

Slight reductions in total fishing effort are expected when adjusting the scallop possession limits for part-time and occasional limited access vessels, because it omits the Amendment 10 provision of allocating no less than one 18,000 lb. trip. Otherwise it may increase the number, but not total duration of scallop fishing effort by part-time and occasional vessels. As such, the habitat impact differences are likely to be negligible.

6.2.12.3 Impacts of Management Measures on Endangered and Other Protected Species

Trips by vessels with part-time and occasional permits in the Georges Bank access areas should not affect protected species whether they are equal or there is a differential by permit category. A large influx of effort would be a concern in areas where sea turtles are common (Mid-Atlantic), and therefore at potentially greater risk.

6.2.12.4 Economic Impacts

Framework 16 proposes to adjust scallop possession limits for the part-time and occasional vessels so that their controlled access DAS allocations will be at the same proportions to the full-time allocations under the DAS schedules prior to the Amendment 10. As a result, part-time vessels would receive controlled access DAS allocations that are exactly 40% of a full-time allocation, and occasional vessels would receive 1/12th of a full-time allocation. This adjustment will result in an increase of the total scallop revenue for part-time vessels, but a reduction of the scallop revenues of the occasional vessels during the 2004-2007 period (Table 140 and Table 141).

The change in the landings and revenues of the vessels with part-time and occasional permits with the proposed allocation system is shown Table 140 for Amendment 10 rotation, and in Table 141 for the proposed Framework 16 (alternative) rotation. The proposed allocation will result in an increase in the scallop landings and revenues of the part-time vessels in 2004, respectively by 3,600 lb. and \$13,478 with the Amendment 10 rotation and by 14,400 lb. and \$53,914 with the Alternative mechanical (Framework 16) rotation. As a result, this alternative would correct the inequity associated with controlled access allocations in Amendment 10, which allocated less access trips to part-time vessels in 2004 compared to what would have gotten based on their historical shares in DAS allocations. However, the possession limits specified for part-time vessels in Amendment 10 exceeded the poundage they would have received if allocations were specified in accordance with the historical proportions in 2005-2007. Similarly, controlled access trip allocations for the occasional vessels were well above the amounts

justified by the pre-Amendment 10 proportions. These inconsistencies will be corrected by the proposed allocation system. The result will be an increase in the total scallop revenues of the part-time vessels by \$26,536 (in 2004 prices) with the Alternative mechanical rotation proposed by Framework 16. If instead, the allocations were done under the Amendment 10 rotation, the part-time vessels would incur a reduction in their total scallop revenues by \$68,656 (in 2004 prices) during 2004-2007. The Council did not adopt this later option as a preferred alternative, however.

Table 140 and Table 141 show that the controlled access possession limits for the occasional vessels will be lowered considerably with the proposed allocation system resulting in a reduction of the scallop revenues of these vessels by \$177,782 with the Alternative mechanical rotation proposed by Framework 16. The loss would be higher, \$183,573, if allocations were done in accordance with the Amendment 10 rotation.

Table 140. Impacts of unequal possession on part-time and occasional vessels: Amendment 10 rotation, Access area trip allocations and possession limits.

Year Permit Category		Proposed allocation Unequal possession limit			Change from Status Quo	
		Number of trips	Possession Limit	Total Landings	Landings	Revenues (in 2004 prices)
2004	Part-time	4	14,400	57,600	3,600	13,478
	Occasional	1	12,000	12,000	-6,000	-22,464
2005	Part-time	2	18,000	36,000	0	0
	Occasional	1	7,500	7,500	-10,500	-35,627
2006	Part-time	1	7,200	7,200	-10,800	-40,435
	Occasional	1	1,500	1,500	-16,500	-61,776
2007	Part-time	1	7,200	7,200	-10,800	-41,699
	Occasional	1	1,500	1,500	-16,500	-63,707
		Status quo allocation				
		Number of trips	Possession Limit	Total Landings		
2004	Part-time	3	18,000	54,000		
	Occasional	1	18,000	18,000		
2005	Part-time	2	18,000	36,000		
	Occasional	1	18,000	18,000		
2006	Part-time	1	18,000	18,000		
	Occasional	1	18,000	18,000		
2007	Part-time	1	18,000	18,000		
	Occasional	1	18,000	18,000		

Table 141. Impacts of unequal possession on part-time and occasional vessels: Framework 16 (alternative) rotation, Access area trip allocations and possession limits (in 2004 prices).

Year Permit Category		Proposed allocation Unequal possession limit			Change from Status Quo	
		Number of trips	Possession Limit	Total Landings	Landings	Revenues (in 2004 prices)
2004	Part-time	3	16,800	50,400	14,400	53,914
	Occasional	1	10,500	10,500	-7,500	-28,080
2005	Part-time	2	18,000	36,000	0	0
	Occasional	1	7,500	7,500	-10,500	-35,627
2006	Part-time	1	14,400	14,400	-3,600	-13,478
	Occasional	1	3,000	3,000	-15,000	-56,160
2007	Part-time	1	14,400	14,400	-3,600	-13,900
	Occasional	1	3,000	3,000	-15,000	-57,915
		Status quo allocation				
		Number of trips	Possession Limit	Total Landings		
2004	Part-time	2	18,000	36,000		
	Occasional	1	18,000	18,000		
2005	Part-time	2	18,000	36,000		
	Occasional	1	18,000	18,000		
2006	Part-time	1	18,000	18,000		
	Occasional	1	18,000	18,000		
2007	Part-time	1	18,000	18,000		
	Occasional	1	18,000	18,000		

Given that there were 33 part-time and 10 occasional limited access permits in 2003, this adjustment will likely impact more vessels positively rather than negatively. In addition, occasional vessels did not usually fish in the controlled access areas, whereas majority of the part-time vessels took closed area trips in the past (Table 142). Therefore, any inequity would impact part-time vessels relatively more compared to their occasional counterparts. Analysis in Amendment 10 showed that out of the 27 part-time vessels that were active in 2002, only 7 vessels, or 26%, did not take any closed area trips. On the other hand, only 3 vessels in the occasional category were identified as active during the 2002 fishing year, and none of them took controlled access area trips.

Table 142. Controlled area access by part-time vessels during 1999-2002 fishing years.

Activity period	Data	Fished in both Mid-Atlantic and Georges Bank controlled access areas	Fished only in Mid-Atlantic controlled access areas	Vessels that did not fish in any controlled access area	Grand Total
Active in 2002 and in some years during 1999-2001	Number of vessels	9	11	7	27
	Percentage of vessels	33%	41%	26%	100%
	DAS-used in controlled access areas as a % total DAS-used	32%	30%	0%	23%
	Average Length	74	75	70	74
	Average GRT	125	118	104	117

Because of the unequal trip limits, Framework 16 is also proposing a change in the DAS and trip exchange option. Under this alternative, limited access scallop vessels would be able to trade controlled access trips only with vessels from the same permit category, i.e., full-time vessels with other full-time permit owners, etc. Although, this measure is necessary to avoid management complications from unequal exchanges, it will also reduce the number of opportunities for trading controlled access trips. It will be especially difficult for part-time and occasional vessels because of small number of vessels fishing in these categories. On the other hand, Amendment 10 provisions provide flexibility to part-time and occasional vessels for fishing in the controlled access, and allows them to choose which access area to fish up to the maximum number of trips allocated to each vessels. Since part-time vessels will be allocated only 3 controlled access trips in 2004 and 2 trips in 2005, and occasional vessels only one access trip during the same years, these vessels may be able to use their trips in the access areas they prefer without the necessity to exchange them with other vessels.

6.2.12.5 Social Impacts

The alternative allocation strategy's objective is to achieve DAS allocations that follow historic shares between the different categories would generate the kinds of social benefits that stem from valuing the concerns of equity. It may, on the other hand, generate social costs to part-time and occasional scallopers if those historical shares are themselves not seen as equitable, as well as those negative social costs that stem from lost revenue.

6.2.13 Scallop Fishing In Controlled Access Areas By Vessels Having General Category Permits (Section 4.2.13)

A procedure for allowing vessels holding general category scallop permits to take trips in the controlled access is considered in Alternative 2 (Section 4.2.13.2). This alternative would limit the total amount of trips and require the vessels to meet the same reporting standards as would apply to other vessels participating in the controlled access program. Alternative 1 would require an adjustment to the current exemption program in the Multispecies FMP. Alternative 1 (Section 4.2.13.1) would not allow general category vessels to fish for scallops in the Georges Bank controlled access areas and is the status quo.

6.2.13.1 Biological Impacts

While a TAC set-aside would limit the impacts on the scallop resource, groundfish, and other species in the controlled access areas, it could encourage over-capitalization in an open access, lightly regulated fishery. Fishermen may, as a result, augment their controlled access trips by fishing for scallops elsewhere or continue fishing for scallops elsewhere when the controlled access areas close.

6.2.13.2 Habitat Impacts

No discernible habitat impacts are anticipated, because access by these vessels would be counted against the scallop TAC for each area. It is possible, however, that access to vessels with general category permits could encourage capitalization of the fishery and have adverse consequences from greater scallop fishing using dredges elsewhere.

6.2.13.3 Impacts of Management Measures on Endangered and Other Protected Species

General category vessels have historically participated in the fishery, although effort attributed to this sector has increased in recent years. While safeguards exist to cap effort in the access areas in which few, if any sea turtle interactions are likely to occur, continued growth of this fleet and its activities outside of the access areas is a concern. Adequate observer coverage and monitoring may help identify such issues.

6.2.13.4 Economic Impacts

Vessels with general category scallop permits would be allowed to take trips with a 400 lb. scallop possession limit in the access areas where fishing is authorized for limited access vessels, until the total number of trips by the fleet equals the total number of authorized trips. The number of authorized trips is calculated based on a two-percent set-aside for scallops. In addition, general category scallop permits will be required to have a VMS on board and will be subject to equivalent reporting and monitoring requirements. The proposed action allows a zero possession limit for groundfish because an equivalent groundfish possession limit (i.e. $400/18,000 \times 1,000$) would be an insignificant 22 lbs. A two-percent set-aside exceeds the scallop landings by vessels with general category permits during 1998 to 2002. Therefore, the proposed allocation system, by itself, is not expected to reduce the opportunities for scallop fishing for general category permits relative to the status quo. This measure will also benefit the scallop fishery as a whole by reducing the risks for exceeding the scallop and groundfish TACs due to new entry to the fishery by general category permits.

Allowing access to the general category vessels to the access areas will have positive impacts on the revenues of these vessels. The amount of revenues from the access area trips will vary with the number of trips, the size of scallops landed and scallop price per pound. Table 143 estimates annual revenues assuming that the scallop prices will be about \$3.90 per pound in the 2004 (Scenario 1), which was the estimated nominal price for the proposed action. The profitability of the access area trips will depend, however, on net revenues, that are revenues net of operating costs, crew shares and VMS costs. These are estimated in Table 143 for various scenarios. The first scenario assumes that annual VMS costs, including the monthly message costs, will amount to \$3,500, which is the estimated cost for Boatracs. For all the scenarios, it was assumed that each trip to the access area would take one-day. According to these estimates, the average expenses for a general category vessel, including the VMS costs, will exceed the gross revenues if it takes 5 or fewer trips in a year, resulting in a net loss (as

indicated by negative net revenue in Column 4). Net revenues from the access area trips will be positive, however, if a general category vessel takes 6 or more trips in a year (shaded cells in column 4), which will increase in proportion to the number of trips taken to these areas.

As Scenarios 2 and 3 show, these estimates are sensitive to the price estimates and VMS costs. If larger scallops are landed from the access areas at a price of 4.75 per pound, for example, revenues will exceed costs for a vessel that takes 5 or more trips (Scenario 2, column 5, shaded cells). If less expensive units of VMS became available or if vessels rented a VMS instead of buying one, for example, at a cost of \$2,500, access area trips would become profitable after the first 3 trips (Scenario 3, column 5, shaded cells). Therefore, the profitability the access area trips for a general category vessel will be determined largely by the number of trips it could take to these areas. It was not possible to estimate the actual number of such trips per general category vessel, however, since it is not known with certainty how many of these vessels will participate in the access area program. Similarly, it could not be predicted at this time, how many general category vessels will choose not fish in the access areas due to the VMS requirement and costs for observer coverage (discussed next).

Table 143. Economic impacts of access on general category vessels

Scenario	Scenario 1 Price = \$3.90, VMS costs = \$3,500				Scenario 2 Price = \$4.75, VMS = \$3,500	Scenario 3 Price = \$4.75, VMS = \$2,500
	Total revenue (1)	Total Trip costs (2)	Crew Shares (3)	Net revenue* (4)	Net revenue* (5)	Net revenue* (6)
Number of trips						
1	\$1,560	\$550	\$386	-\$2,876	-\$2,740	-\$1,740
2	\$3,200	\$1,100	\$820	-\$2,220	-\$1,980	-\$980
3	\$4,800	\$1,650	\$1,230	-\$1,580	-\$1,220	-\$220
4	\$6,400	\$2,200	\$1,640	-\$940	-\$460	\$540
5	\$8,000	\$2,750	\$2,050	-\$300	\$300	\$1,300
6	\$9,600	\$3,300	\$2,460	\$340	\$1,060	\$2,060
10	\$16,000	\$5,500	\$4,100	\$2,900	\$4,100	\$5,100
13	\$20,800	\$7,150	\$5,330	\$4,820	\$6,380	\$7,380
15	\$24,000	\$8,250	\$6,150	\$6,100	\$7,900	\$8,900
20	\$32,000	\$11,000	\$8,200	\$9,300	\$11,700	\$12,700
30	\$48,000	\$16,500	\$12,300	\$15,700	\$19,300	\$20,300

* Net revenue = Total revenue – total trip costs – crew income – annual VMS costs (which is estimated to be \$3,500 and not shown in the Table).

In addition to the VMS requirement, the general category vessels will also be required to carry an observer on board for some trips as determined by Regional Administrator. The observer costs amount to approximately \$707 a day, and will be partially or fully covered by increasing the possession limit for the general category vessel. At the estimated scallop price of \$3.90, this would require an allowance of 181 lbs. per observed day in 2004, increasing the possession limit to 581 lbs. per day. On the other hand, the crew may need to spend more time landing and shucking extra scallops, which may result in an increase in the trip expenses. Therefore, the observer allowance should exceed this amount (i.e., 181 lbs) in order to compensate the crew for these expenses.

6.2.13.5 Social Impacts

Allowing vessels with general category permits to target scallops in re-opened areas would generate positive social impacts to the general category fleet that stem from the perception of increased equity and access, and the benefits from increased revenue to general category vessels (conversely creating negative impacts if the large-boat fleet negatively perceives the decision). Yet the institutional parameters of the decision, however well-intentioned to provide general category vessels access to scallop resources, create the potential for a derby fishery, without recognizing as different those general category vessels that had historic claims to the fishery. Though most general category vessels have not been active in the scallop fishery (see Section 8.8.6 in Amendment 10), this alternative does not account for a sudden influx of general category effort due to the added opportunity to fish. The decision would also involve financial costs to participating vessels from the outlay for VMS and allowable gear, though some of these impacts are not exclusive to the decision per se since the gear changes will eventually be in effect generally.

6.3 Cumulative Effects

6.3.1 Scoping and Opportunity for Public Comments and Participation

This action was prepared as a framework action, which, according to the Council policies and consistent with the framework adjustment rules in the Scallop FMP and the NE Multispecies FMP, is conducted during the course of two Council meetings where there are opportunities for oral and written public comment.

The initial meeting was held on November 6, 2003 in Peabody, MA, where the Council identified the issues to be addressed and the types of alternatives that should be considered during the development of the framework adjustment. At this meeting, the Council voted to focus on management measures related to access to portions of Closed Area I, Closed Area II, and the Nantucket Lightship Area during 2004 to 2007, changing the boundaries of the EFH closed areas in the Scallop FMP (Amendment 10) to be consistent with those in the Multispecies FMP (Amendment 13) and improve their practicability, and measures that would allow vessels with general category scallop permits to target scallops when these areas are open to fishing by limited access vessels. Members of the public spoke to urge the Council to closely examine the EFH related data for the proposed access areas using the recently available SMAST data and to re-consider how the FMP makes DAS allocations to part-time and occasional limited access vessels. The Council directed staff to obtain this information and include alternatives that might adjust the part-time and occasional DAS allocations, focusing on the area access allocations for Framework Adjustment 16/39. All alternatives were to be evaluated and analyzed with respect to their impact on EFH, on bycatch (particularly on groundfish bycatch), and on the scallop resource.

As is customary, the specifics of the alternatives were to be developed by the Council's oversight committees, relying on advice from the plan development teams (PDT) and advisory panels (AP). All of these meetings are open to the public, who are often given ample opportunities to speak or submit written comments at these meetings. The Council held a joint Scallop and Groundfish PDT meeting on December 5, 2003 to develop technical advice and initiate analyses of proposed alternatives on the groundfish and scallop resources. Three days of Scallop PDT meetings (December 4, 2003 and January 6-7, 2004) were also held to draft technical advice and prepare preliminary analyses, including scallop biomass and TAC estimates, scallop biomass and mortality projections, and groundfish bycatch projections. The Council also held a Scallop AP meeting on January 15, 2004 to review the PDT technical advice and strawman alternatives, and to prepare industry advice of the Scallop Oversight Committee. With help and review by the Habitat Technical Team members, Dr. Stokesbury, and Brad

Harris (both from SMAST, New Bedford, MA), the staff prepared the metric analysis showing the effects on EFH. The Habitat Technical Team met on January 14, 2004.

These data, analyses, and advice were presented to the Council's Oversight Committees, where they developed recommendations for alternatives to be considered and analyzed in the framework adjustment. The Habitat Oversight Committee met on January 13, 2004. This was followed by a Groundfish Oversight Committee meeting on Framework Adjustment 39 to the Multispecies FMP on January 15, 2004 and a Scallop Oversight Committee meeting on Framework Adjustment 16 to the Scallop FMP on January 16, 2004. All of these meetings were held at Mansfield, MA.

Because there were some differences in committee recommendations and there were some loose ends that were addressed by an ad hoc working group, the recommendations were reported to the Council, at its January 25, 2004 meeting in Newport, RI, to reconcile the differences and approve the alternatives that would be analyzed in the final framework document. Several issues were contentious including a Habitat Oversight Committee proposal for a different access boundary alternative, groundfish TACs and possession limits, and a proposal for managing the fishery with a soft yellowtail flounder TAC that was brought forth by an ad hoc working group named by the Scallop Oversight Committee. The impacts of these alternatives were analyzed and a final draft framework document was prepared for consideration at a final framework meeting. The Council reviewed the analyses and accepted oral and written public comment at a final framework meeting, held on February 24, 2004 in New Castle, NH. Considering the final analysis of impacts and public comment, the Council approved a set of final alternatives to be submitted as the proposed action for Secretarial Review.

6.3.2 Boundaries – Access to Nantucket Lightship Area, Closed Area I, and Closed Area II in 2004 - 2007

The primary focus of this action is on allowing scallop fishing within defined boundaries of the groundfish closed areas, including Closed Area I, Closed Area II, and the Nantucket Lightship Area, and on conservation of essential fish habitat particularly through adjustments to closed area boundaries. The areas that are defined by this proposed action are shown in the map on the front cover of this document.

Since the open area DAS allocations are also changed by the proposed action, it will also affect scallops and other affected marine resources (habitat, finfish bycatch, sea turtles, etc.) wherever fishing occurs in the open areas where scallops occur (not including the Hudson Canyon Area controlled access area and the Elephant Trunk Area rotation closed area).

A map showing the distribution of sea scallops and of limited access scallop fishing effort is shown in the maps below. The proposed access areas are within the boundaries of the three Georges Bank groundfish closed areas which have been closed to scallop fishing since December 1994, except for limited scallop fishing during the 1999 and 2000 scallop fishing years. Areas of increasing scallop fishing effort in the access areas and of decreasing effort in open fishing areas define boundaries of probable direct, indirect, and cumulative impacts.

The distribution of fishing effort by limited access vessels with VMS aboard during 2000 is shown in the map below. The effort is classified into quartiles and summarized by total effort in a one nm² (3.43 km²) grid. Much of the fishing effort in the open areas of the Georges Bank region occurred along a band in the Great South Channel, running from east of Cape Cod, MA to an area between the Nantucket Lightship Area and Closed Area I. Three other concentrations of fishing effort also occur to the NE of Closed Area I, along the northern edge of Georges Bank west of Closed Area II, and SE of Closed Area II. These areas follow the highest abundance of adult scallops and would experience the

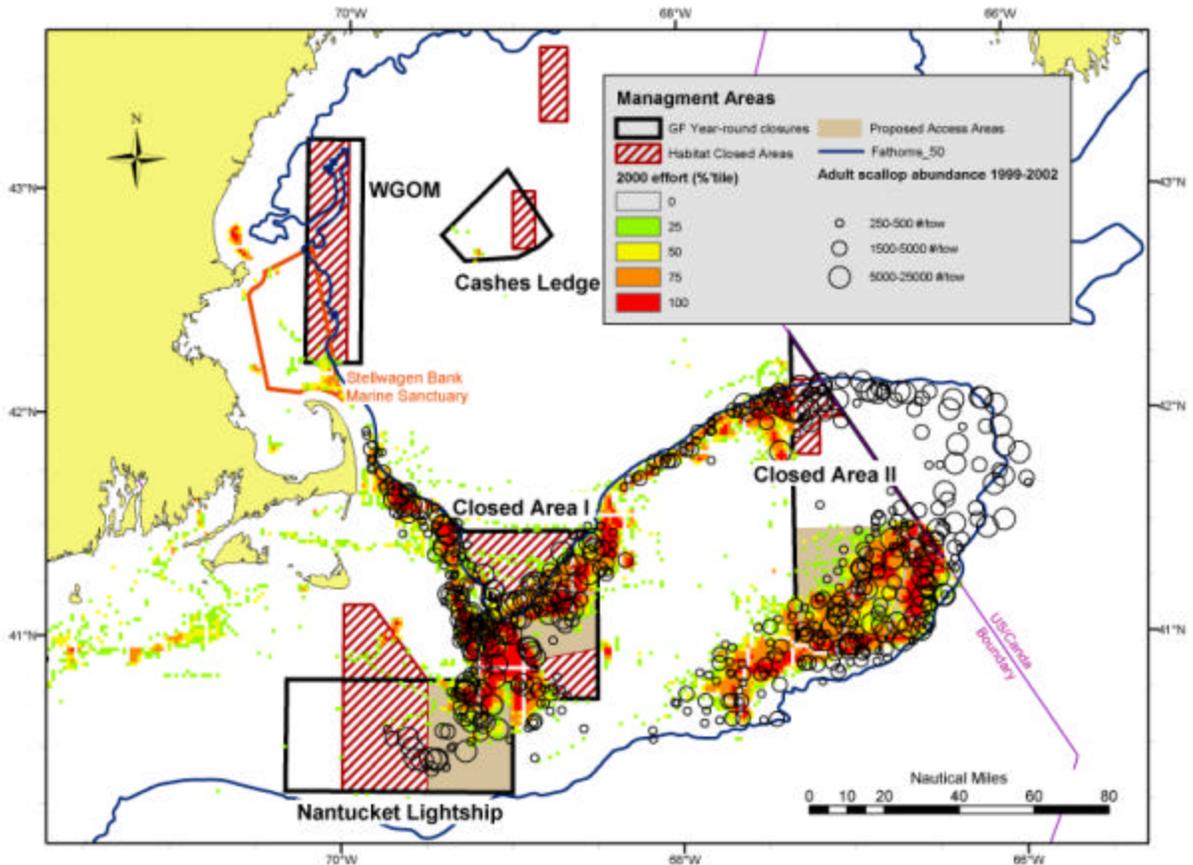
most change of scallop fishing effort from the proposed action, due to adjustments to the open area DAS allocations.

Secondary concentrations of fishing effort are north of Provincetown, within the boundaries of the Stellwagen Bank Marine Sanctuary and in the SW corner of the Western Gulf of Maine area. Another area of scallop fishing occurs within Ipswich Bay, north of Rockport, MA and near Halfway Rock. A third secondary concentration of scallop fishing effort occurs on Fippinees Bank, within the boundary of the Cashes Ledge groundfish closed area. The amount of effort in the map below for these three areas is underestimated because these areas are frequently fished by small vessels with general category scallop permits, which do not have VMS equipment on board. A fourth concentration of secondary scallop fishing effort occurs within the boundaries of the EFH closed area near the Nantucket Lightship Area, proposed for closure by this action.

Within the proposed access areas themselves, the adult scallop and fishing effort distributions also have a distinct pattern. These areas would experience an increase in fishing effort from the controlled access program. Within the Nantucket Lightship Area, the 2000 scallop fishing effort was confined by regulation to the NE corner of the Nantucket Lightship Area. This corresponds to the highest concentrations of adult scallops, but there were also high concentrations to the SW of that area, which are likely to see some fishing effort under the proposed action.

Similarly, the scallop fishing effort in Closed Area I also followed the distribution of adult scallops, but was constrained by regulation to a central area of Closed Area I. High concentrations of adult scallops also occurred a little farther south, within the boundaries of the proposed access area in this action. Likewise, these areas are likely to experience increases in scallop fishing effort for the first time since December 1994.

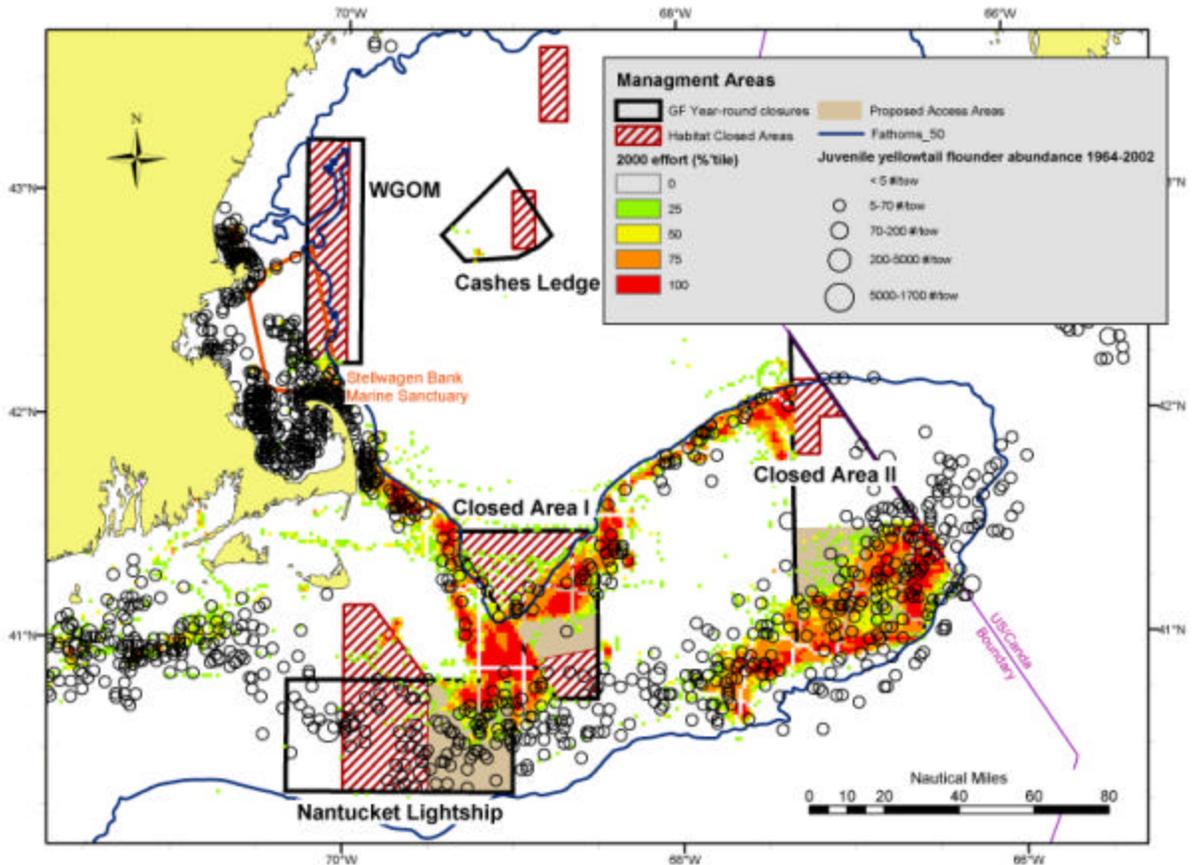
The proposed access area in Closed Area II was the same one that was open to scallop fishing in 1999 and 2000. About that time, exceptional scallop recruitment occurred mainly in the south central portion of the proposed access area. These scallops have since grown to optimal size and the effort distribution is likely to be a little different than the effort distribution in the 2000 fishing year (see map below) that focused in a band running SW to NE and along the SE side of Closed Area II.



Map 20. Map of the Georges Bank proposed access areas in the Nantucket Lightship Area, Closed Area I, and Closed Area II, with adjusted EFH closed areas, showing the distribution of 1999-2002 adult scallop abundance and 2000 fishing effort intensity.

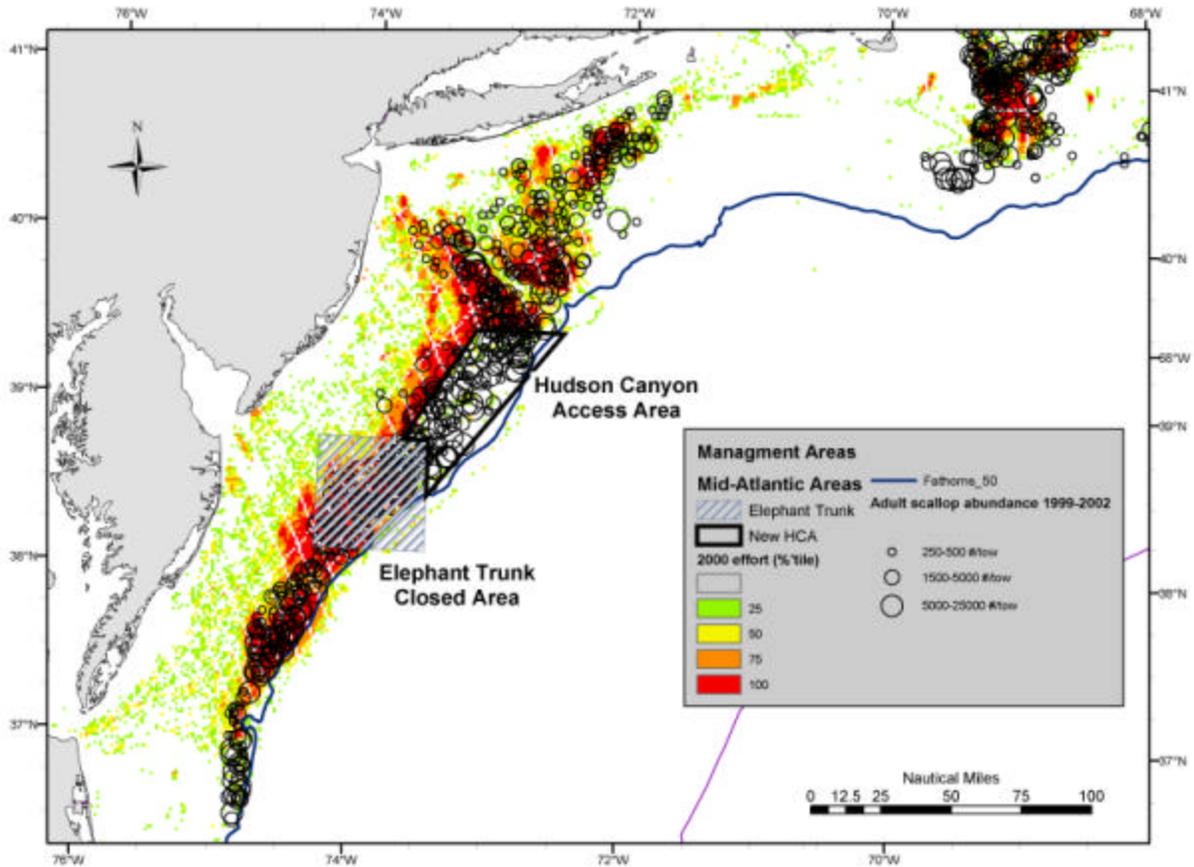
The distribution of yellowtail flounder and scallop effort also defines boundaries of effects on a groundfish species that is more likely than the others to have impacts from the proposed action. Yellowtail flounder in the open scallop fishing areas are expected to experience a decline in catches from scallop fishing. These areas mainly occur along a strip running from the northern part of Cape Cod to the NW edge of Closed Area I (see map below). These yellowtail flounder are considered to be part of the Cape Cod stock.

Two other areas where yellowtail flounder occur, along the northern edge of Georges Bank from Closed Area I to Closed Area II, and SE of Closed Area II, are also expected to experience a decline in catches in the scallop fishery (see map below). Yellowtail flounder occurring in these areas are considered to be part of a Georges Bank stock. Some scallop fishing effort in open areas that coincide with yellowtail flounder distributions occurs toward the west, SW of Marthas Vineyard, MA and east of Long Island, NY. Yellowtail flounder in this area are considered to be part of a Southern New England/Mid-Atlantic stock, but the scallops are considered to be part of the Mid-Atlantic region.



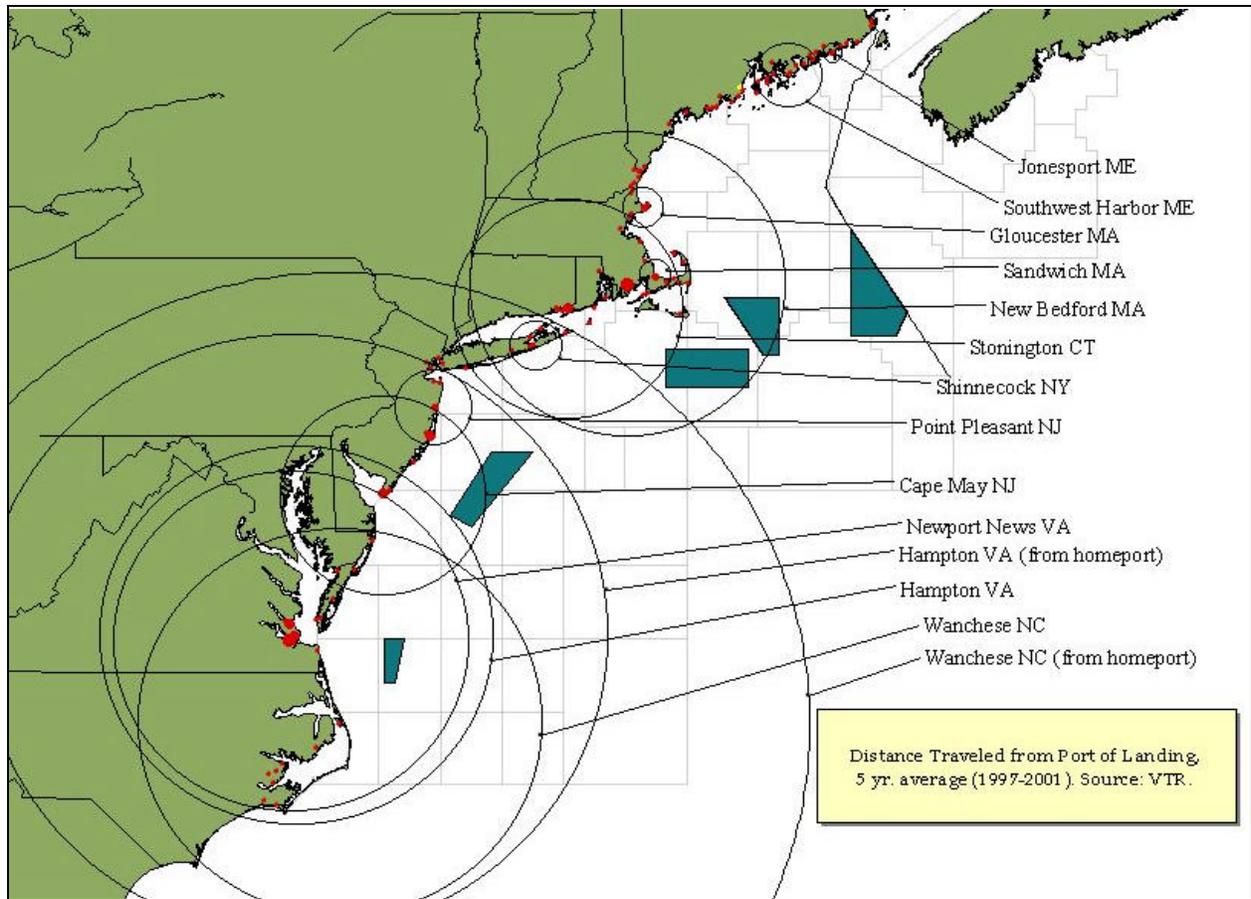
Map 21. Map of the Georges Bank proposed access areas in the Nantucket Lightship Area, Closed Area I, and Closed Area II, with adjusted EFH closed areas, showing the distribution of 1963-2002 juvenile yellowtail flounder abundance in the autumn survey and 2000 fishing effort intensity.

In the Mid-Atlantic region, adult scallops occur from the eastern end of Long Island, NY to the continental shelf edge off of the NC/VA border. Effort and adult scallops are most concentrated in a band running along the southern edge of the Hudson Canyon, beginning off Brielle, NJ, out to the (formerly closed) Hudson Canyon Area and down to the shelf edge off the DelMarVa region. With the exception of within the Hudson Canyon Area (which will have an area-specific DAS allocation, pending approval of Amendment 10) and the Elephant Trunk Area (which will be closed, pending approval of Amendment 10), impacts associated with scallop fishing will see the greatest reduction due to the proposed open area DAS adjustments along this band.



Map 22. Distribution of 1999-2002 adult scallop abundance and 2000 scallop fishing effort, compared with the closed Elephant Trunk Area and Hudson Canyon Access Area, pending approval of Amendment 10.

In addition to a direct effect on fishing effort, the proposed action will also affect the landings and markets at the primary ports. This includes ports which harbor large limited access vessels that travel large distances to reach fishing grounds and smaller ports which harbor small vessels (often those with general category scallop permits) that fish nearby scallop grounds. A map of these ports and the average distances that vessels travel to fish are shown in the map below.



Map 23. Five-year average of distance traveled from port (port of landing, or homeport if specified). Includes only scallop trips (trips landing greater than 40 lbs. of sea scallops) by Federally permitted vessels (general category or limited access vessels). Source: logbooks.

The geographical area encompassed by the proposed action and managed by this FMP includes the seawater and seabottom of the Atlantic Ocean within US jurisdiction and includes the vessels participating in the fishery, the ports where scallop vessels tie-up, and the shore-side facilities to the point of landing. The point of landing is typically the location where a shore-side individual or entity takes possession of the catch for processing and re-sale. Most of the scallop population under US jurisdiction ranges from the coastline of Maine, south to Georges Bank, then from offshore of Long Island, NY running south and southwest to off the coast of North Carolina in the Mid-Atlantic region. Adult scallops are found in depths ranging from a few meters in the north, to 20 to 40 fathoms through most of the range, and sometimes much deeper although scallops in deeper areas have low meat yields and may not contribute to spawning activity as much as other scallops. Scallop larvae exist in the water column from the bottom to the surface layers and drift with prevailing currents, throughout the NW Atlantic Coastal Shelf.

6.3.3 Valued Ecosystem Components (VECs)

The following concerns represent valuable environmental components that the Sea Scallop FMP and Amendment 10 affect. Practically, the act of scallop fishing changes their condition or character, even deriving a benefit from the vessel activity and/or landings. For some VECs, more fishing would cause a decline in biomass or abundance. For other VECs, their condition improves with greater

sustainable landings. Others experience change depending on how and where scallop fishing effort occurs, or the complexity of the rules governing scallop fishing.

6.3.3.1 Sea Scallop Resource under US jurisdiction and the Scallop Fishery

This includes all scallop larvae in the water column and juvenile and adult scallops that settle and grow on the seabed. The fishery includes all vessels with limited access and general category scallop permits, the dealers that buy and process sea scallops from the vessels, and primary suppliers to the vessels that sell them gear, engines, boats, etc.

6.3.3.2 Vulnerable Finfish Resources Caught as Bycatch in the Scallop Fishery

This includes all regulated species that fishermen catch in scallop dredges and trawls, except for sea scallops. Fish and shellfish other than scallops that are landed are not bycatch and are not included. Species that are frequently included as bycatch are discarded individuals of monkfish, yellowtail flounder, and various species of skates (including barndoor).

6.3.3.3 Essential Fish Habitat (EFH) for Finfish, Scallops, and Shellfish Under Federal Management

This includes all marine habitats deemed essential to the well-being and reproduction of managed marine species. The geographical distribution and characteristics of EFH are defined in the management plans that regulate the fisheries targeting marine species.

6.3.3.4 Protected Species

This VEC includes marine mammal and turtle species that are classified as endangered or threatened under the Endangered Species Act or protected under the Marine Mammal Protection Act and which have interactions with scallop fishing gear or are otherwise affected by scallop fishing.

6.3.3.5 Human Safety at Sea

This includes the health and well-being of captains, crew, and other individuals while aboard at-sea scallop vessels.

6.3.3.6 Fishing Dependent Communities

This includes coastal communities with fishing ports, whose economies and social structure are substantially dependent on or affected by scallop fishing activity and income.

6.3.4 Sources of Impacts (Pathways)

Most of the environmental impacts that are regulated by this FMP arise from the act of fishing for sea scallops. Impacts occur because fishing gear makes contact with and disturbs the sea bed environment, because the scallop fishing gear selectively removes various species from the environment (some of which are discarded as unwanted or regulatory bycatch), and because the retain catch is landed at coastal ports which generates revenue and economic activity. Environmental impacts on scallops, scallop larvae, and scallop habitat through activities that degrade water quality, suspend sediments in the water column, and change circulation.

6.3.5 Time series

For the purposes of this action, the time series for the cumulative effects analysis begins with December 1994, when the proposed access areas and most of the proposed EFH closed areas were closed to scallop fishing, as a result of actions taken under the Northeast Multispecies FMP to create year around closures to reduce fishing impacts on overfished groundfish stocks, particularly cod, haddock, and yellowtail flounder. This action, initiated by an Emergency Action, and continued indefinitely by Amendment 7 to the Multispecies FMP to boost rebuilding potential, excluded scallop dredges and trawls as gears capable of catching groundfish.

Since that event, groundfish biomass of regulated species has climbed by 2.5 times from a 1994 low, but many groundfish stocks require further rebuilding and mortality reduction. Partly due to these closures and due to mortality reduction and good management for scallop fishing elsewhere, the scallop biomass has grown by over five times and is now considered rebuilt. Much of the data used in the analysis of direct and indirect impacts came from observations of a controlled access scallop fishery that occurred during the 2000 fishing year, from June 15 to January 31. Data about fishery performance in the access areas during February 1 to June 14 are therefore unavailable.

Scallop resource surveys are collected annually by the NMFS aboard the R/V Albatross. The 2002 survey was the most recent data available for performing projections and for estimating stock size, when the analysis for the Amendment 10 FSEIS was prepared. Since that time, the 2003 survey data were audited and have become available for analysis. Around the same time in 2003, Dr. Kevin Stokesbury (SMAST, New Bedford, MA) completed a video survey that was combined with the annual survey data to make more precise estimates of standing biomass in the proposed access areas.

Although the duration of the proposed action is 2004 – 2007, the scallop resource and other VECs will feel the effects for some time after that. This analysis therefore assumes that area access and mechanical area rotation will continue for the next 10 years (2004 – 2013) and biological projections were prepared over this time period. Beyond that time, the effects are very uncertain because many of the individuals that are present in the population during the proposed access will no longer be alive (due to fishing and natural mortality). This timeframe also coincides to the rebuilding period for many species in the Multispecies FMP, after which management will probably change. Another factor in the forecasting time series is that the management measures will be evaluated for the effectiveness in achieving FMP objectives every two years and will be potentially adjusted by a biennial framework adjustment for scallop management measures and an annual framework adjustment for multispecies management measures. The next scallop framework is scheduled for review and implementation before the beginning of the 2006 fishing year. These uncertainties and potential management changes therefore place a 10-year limit on meaningful analysis of cumulative impacts.

6.3.6 Mitigation and Monitoring

No mitigation is needed because the proposed action is expected to reduce adverse impacts on the environment. Monitoring of the scallop resource, fishing activity and catches, bycatch, and interactions with protected species is needed to ensure the FMP meets its objectives, produces optimum yield, and identifies ways to enhance yield (through area access, rotation management, and mortality control) and minimize impacts (TACs, gear restrictions, and fishing time).

6.3.7 Interactions among environmental effects and significance of cumulative effects of past, present, and reasonably foreseeable future actions

The following tables summarize the cumulative effects of the alternatives on the six VECs identified in Section 6.3.3. Since the alternatives in the proposed action and alternatives to the proposed action are analyzed and compared within Section 6.2, with a summary of aggregate impacts for the proposed action in Section 6.1, a summary discussion of these impacts is given in the introduction for each VEC. Similarly, the cumulative effects of past and present actions as well as reasonably foreseeable future actions (RFFA) cuts across many alternatives and is discussed in the introduction for each VEC. Since Amendment 10 to the Sea Scallop FMP and Amendment 13 to the Northeast Multispecies FMP have not been approved at the present time, these actions are considered to be RFFAs for the purposes of this analysis.

6.3.7.1 Sea scallop resource under US jurisdiction

6.3.7.1.1 Direct and Indirect Impacts of the Proposed Action

Section 6.1.1.1 describes and summarizes the expected biological impacts on the scallop fishery and resource, focusing on the preferred alternatives. An insignificant impact is anticipated in the proposed access areas, because only 17% of the scallop biomass would be removed from each access area when open to fishing and the areas contain very high amounts of scallop biomass. These catches are less than the average annual biomass growth for sea scallops. Because the scallops are slow-growing and large, the proposed access is expected to cause a moderate decline in scallop biomass in the access areas, despite the low fishing mortality that is anticipated from the proposed mechanical rotation strategy. Scallop biomass in the EFH closure areas in Closed Area I and Closed Area II is expected to continue increasing over the 10-year forecast period. Thus spawning in the groundfish closed areas is unlikely to be affected.

Most of the effects on the scallop fishery and the resource occur in the open fishing areas (excluding the Hudson Canyon Area, Nantucket Lightship Area, Closed Area I, and Closed Area II). This occurs because granting access in this framework action enables the FMP to reduce fishing effort allocations in open fishing areas. As a result, the Council expects an increase in scallop biomass in the open areas, which coupled with the effort reductions causes daily catches to increase, fishing costs to decrease, spawning potential in the open areas to increase, and bottom contact time to decline (which has important consequences for other VECs and may reduce non-catch mortality on small scallops).

The preferred alternative is expected to have positive impacts on the scallop fishery, particularly in the New England region. The fishery will have access to large scallops whose biomass has stopped growing, allowing a decrease in fishing mortality on scallops in open areas where growth is higher. Overall, this action is expected to increase yield-per-recruit and help to stabilize yield over the long haul. The industry will also be able to land larger, more valuable scallops and decrease fishing costs, which will have a beneficial effect on the scallop fishery.

6.3.7.1.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

Scallop fishing is regulated by the Atlantic Sea Scallop FMP in waters under Federal jurisdiction, and by state regulations in the state waters of MA, NH, and ME. Scallop fishing activities in the waters of these three states have been certified to continue under a special state exemption that requires the states to demonstrate that scallop fishing in state waters would not jeopardize the ability of the FMP to produce

optimum yield or prevent overfishing. This non-Federal action therefore does not have a significant cumulative effect on the scallop fishery or resource.

The management background and the implementation of relevant management actions is more thoroughly described in Section 3.2.1. In 1994, Amendment 4 to the Scallop FMP established three classes of limited access permits and initiated a DAS reduction schedule to reduce mortality and prevent overfishing. At that time, fishing that created mortality above an amount that was estimated to cause adverse impacts on recruitment was defined as overfishing the resource. The maximum fishing mortality threshold was a level calculated to produce spawning stock biomass of 5% of a virgin stock, which was estimated to be $F=0.71$. Since the amendment applied input controls (effort allocations) to control mortality, the amendment also established several controls on a vessel's fishing power including vessel upgrade restrictions and limits on the number of crew that shucked the scallops. The amendment also increased the minimum ring size, first from 3" to 3¼", and then to 3½" a year later. These measures reduced fishing mortality from about 1.6 in 1994 to 0.16 for the Georges Bank region and 0.92 in the Mid-Atlantic region. Just as important, the gear restrictions and crew limits replaced an effective minimum meat count measure and prevented many vessels from targeting very small scallops (averaging 40 count and up). Annual landings during this period remained low, between 14.4 and 17.6 million lbs.

During this period, many vessels began fishing more frequently in the Mid-Atlantic region, rather than in Georges Bank, because the daily catch rate in the Georges Bank region declined and because an Emergency Action prevented scallop fishing in the Nantucket Lightship Area, Closed Area I, and Closed Area II beginning in December 1994. A later action by the Council, Amendment 7 to the Multispecies FMP, made these year-around closures permanent. Since they applied to vessels using scallop dredges and trawls, fishing mortality on scallops in these areas was nil. Even though intense fishing effort had occurred in the Great South Channel following a strong 1990 scallop year class, this year class contributed to the increasing biomass in the closed areas since 1994. These actions kept landings at historically low levels and caused an extraordinary increase in scallop biomass in the Georges Bank region.

Coincidentally, the 1994 groundfish closures forced fishing effort allowed by the Scallop FMP into the remaining open areas, particularly in the Mid-Atlantic region. As a result, fishing mortality in the open fishing areas increased, causing further depletion of scallop biomass in open fishing areas and reductions in the daily catch rates experienced by the fishery. Increasing fishing effort on small scallops in open areas became a concern to the Council, which first reduced the maximum crew limit from 9 to 7 men in 1996 (Framework Adjustment 1). The lower crew limit was intended to cause fishing vessels to target larger scallops, because it is harder to shuck small scallops with a smaller crew. The 1997 scallop survey discovered a large year class of small scallops in the Mid-Atlantic region, causing the Council to identify two areas for possible closure, what later became known as the Hudson Canyon and VA/NC Areas.

First by Emergency Action, and then by Amendment 7, the FMP closed these areas for three years, beginning in March 1998. This action reduced (or at least prevented increasing) fishing mortality on small scallops that would otherwise have reduced total yield over the life of that cohort.

Amendment 7 also revised the overfishing definition to address the new rebuilding and optimum yield mandates of the Sustainable Fisheries Act of 1996. Amendment 7 established new biomass targets for scallops in the Mid-Atlantic region and in the Georges Bank region, based on an estimated survey weight per tow equivalent when the average level of recruitment (1978 – 1997) were to experience fishing mortality that would produce the maximum yield-per-recruit. The latter mortality level is a common fisheries parameter known as F_{max} , and the equivalent biomass target was labeled B_{max} .

At this time, B_{\max} was estimated to be about five times the current stock biomass that was observed in the 1997 survey in both regions (including scallop biomass in the closed areas). F_{\max} was estimated to be $F=0.21$, or about 25% of the former target. To achieve this lower fishing mortality threshold, Amendment 7 established a new DAS allocation schedule that instead of leveling off at 120 full-time DAS, was to drop to 51 DAS by 2000 and bottom out at 34 DAS in 2004. The plan was expected to achieve the biomass target by 2008, 10 years after implementation of the amendment.

Beginning in 1997 and 1998, scientists noted that scallop biomass in the groundfish closed areas on Georges Bank was increasing rapidly and that the scallop resource conditions there were (unsurprisingly) different than those in the open scallop fishing areas. An experimental fishery and several surveys were conducted, which prompted the Council to consider allowing limited scallop fishing in portions of the groundfish closed areas. An initial program was developed in Framework Adjustment 11, allowing scallop fishing in the southern part of Closed Area II from June 15 to November 2, 1999. Catch rates were of course very high and a few days of fishing in the Closed Area II access area were equivalent to the catches in open fishing areas on much longer trips. Thus, Framework Adjustment 11 established a tradeoff, whereby limited access scallop vessels could fish a limited number of trips with a 10,000 lb. scallop possession limit for a tradeoff in the DAS charge. Although the trips lasted from 4 to 6 DAS, vessels were charged 10 DAS for the trip, which effectively removed excess fishing effort allocations and reduced scallop mortality and environmental impacts in open fishing areas.

Georges Bank yellowtail flounder, at the time an overfished groundfish stock, was seen as being potentially vulnerable from the scallop fishing in Closed Area II, causing the Council to set a TAC for yellowtail flounder bycatch in this carefully monitored fishery. Despite this TAC, which ultimately closed the 1999 access program, most of the scallop TAC had been landed and many of the authorized trips had been taken. This fishing effort in Closed Area II, plus the additional effort in 2000 (see below), caused the accumulated scallop biomass to decline. Also, the Council was concerned about impacts on groundfish spawning activities in Closed Area II, and based on technical advice approved a June 15 to December 31 season for scallop fishing in the southern part of Closed Area II to avoid fishing during peak groundfish spawning activity.

The Framework Adjustment 11 access program was viewed as being very successful, from the perspective of scallop fishery management, and the program was continued and expanded to other closed areas. More concerns were raised, however, about the impacts on overfished groundfish stocks, impacts on sensitive habitat found in the closed areas, and on potential gear conflict with fixed gear. More analysis was conducted in Framework Adjustment 13 to address these concerns, which caused the Council to set area access boundaries to avoid sensitive habitat and gear conflict and to set seasons and TACs for yellowtail flounder to limit impacts on groundfish species. Framework 13 allowed controlled access and limited the number of trips in the southern part of Closed Area II, in the NE corner of the Nantucket Lightship Area, and in a central portion of Closed Area I, areas where there appeared to be less sensitive bottom substrates.

Like the program before, there was a 10,000 lb. scallop possession limit and vessels on controlled access trips in 2000 were charged 10 DAS, which effectively reduced the effort allocations for open fishing areas by a greater amount than the amount of fishing effort that was experienced in the access areas. Fishing trips in the access areas averaged 6 to 8 days, because the daily catch rate in the access areas was less than that found in Closed Area II during 1999. At the same time, the average daily catch in the open areas began increasing from increases in scallop biomass in the open areas of the Georges Bank and Mid-Atlantic regions. Overall, landings per DAS increased from 478 lbs./day in 1998, to 983 lbs./day in 1999, and then to 1,309 lbs./day in 2000. Many vessels did not find the tradeoff to be as attractive as it had been in 1999 and vessels took a lower proportion of allocated trips. Prices also responded to the higher landings of U10 and 10/20 count scallops, which caused the controlled access

trips to be less profitable for vessels, compared to using their DAS allocations to fish in open areas elsewhere. Catches in the Nantucket Lightship Area were high and meat yield was good. On the other hand, Closed Area I opened to scallop fishing in October 2000, at the height of scallop spawning on Georges Bank. Both meat yield and quality were low and vessels took few trips in Closed Area I.

As a result of these access programs, many of the large scallops in Closed Area II had been caught, but much of the large scallops remained in Nantucket Lightship Area and Closed Area I, a result corroborated by subsequent surveys and experimental fishing activities. During the 2000 survey, however, scientists discovered an extraordinarily large year class of small scallops in the southern part of Closed Area II. Since these scallops are about two years old when they can be observed by the annual resource survey, these scallops began settling on the bottom before or during the area access programs in 1999 and 2000. These surveys also identified an area off of Cape Cod, MA and south of Long Island, NY that had high concentrations of small scallops, and thus were suitable candidates for closure to reduce mortality on small scallops.

In the meantime, the scallop biomass in the Hudson Canyon and VA/NC Areas had increased due to the ad hoc closure begun in 1998. Like the events in the groundfish closed areas, this offered an opportunity to allow fishing on larger scallops and reduce fishing mortality in the open fishing areas by shifting fishing effort and reducing fishing effort through the DAS tradeoff. By this point, a 10,000 lb. to 10 DAS tradeoff was no longer economically attractive, compared to fishing in the open areas. Daily catch rates in the open areas were approaching 1,000 lbs./day, erasing any advantage for a vessel to fish in the Hudson Canyon and VA/NC Areas with a 10,000 lb. limit. In addition, because vessels were charged 10 DAS no matter how many scallops were actually landed or how long the trip took, there was a tangible risk that vessels would lose DAS due to an early return from equipment failure, weather, or a medical emergency. To make access workable, Framework Adjustment 14 allowed controlled access scallop fishing in the Hudson Canyon and VA/NC Areas increasing the scallop possession limit to 17,000 lbs./trip in 2001 and 18,000 lbs./trip in 2002.

When the Hudson Canyon and VA/NC Areas opened for fishing, fishermen discovered that catches were good in the Hudson Canyon Area, but very poor in the VA/NC Area. This was later corroborated in the resource survey in July 2001. Apparently, events occurred between the July 2000 resource survey and the March 2001 re-opening to remove roughly 1 million lbs. of scallop meats from the area. Some speculate that the reduction in VA/NC Area biomass was caused by environmental events, through scallop bycatch in fisheries targeting other species with trawls, or by poaching. Many believe that the VA/NC Area was too small to monitor effectively.

Nonetheless, the controlled access program for the Hudson Canyon Area was mostly successful and allowed the FMP to allocate 120 full-time DAS to limited access scallop vessels, without harming the scallop resource. Scallop biomass and average daily catches continued rising to 1,665 lbs./day in 2000 and 1,764 lbs./day in 2001. The increasing scallop biomass and catch rates made scallop fishing more profitable and began reducing full-time per DAS as daily catches began to exceed the capacity of a seven-man crew to shuck scallops. SAFE Reports and analyses for Amendment 10 suggest that this has been beneficial to scallops by reducing mortality on small scallops and reducing non-catch mortality from scallop fishing.

Framework Adjustment 14 also considered some new rotation closed areas, based on the resource survey data. Fishermen resisted new closures, however, because they believed that there were sufficient areas closed to scallop fishing (Closed Area I, Closed Area II, the Western Gulf of Maine Area, and the Nantucket Lightship Area) or partially closed to scallop fishing through controlled access (the Hudson Canyon and VA/NC Areas). As a result, no closures were initiated and the small scallops in the 2000 survey were eventually reduced by fishing. Although not all of the authorized trips were taken and the

VA/NC Area contained few scallops, the Council continued the access program in 2002 in Framework Adjustment 15, raising the scallop possession limit to 21,000 lbs./trip to adjust to the rising scallop biomass and catch rates in the open areas.

As a result of the above management, coupled with above average recruitment in the Mid-Atlantic region and continuing closures in the Georges Bank region, scallop biomass had risen in 2003 to the biomass targets, five years earlier than planned! Total fishing time declined from over 44,000 DAS in 1992, bottoming out at 23,000 DAS in 2000, before rising to 30,000 DAS presently. More importantly, fishing mortality has been lowered to around F_{max} ($F=0.20$) for the resource, although it remains stubbornly high in the open areas of the Mid-Atlantic region. Similar to fishing mortality, the amount of area swept (a measure of actual fishing time) has declined from 30,000 nm^2 in the early 1990s, to about 12,000 nm^2 in 1999, to about 3,500 nm^2 presently. This reduction in fishing time has had a positive impact on the scallop resource by reducing non-catch mortality, as well as on other VECs. It has also reduced fishing costs, increasing the profitability of the fishery to near record levels. More importantly, the seven man crew and limits on returning to port with shell-stock (Framework Adjustment 14) has kept the fishery from targeting small scallops that have been very abundant, particularly in the Mid-Atlantic region which has experienced above average recruitment since 1997.

Scallops are filter feeders, and as such, are affected by marine activities that increase turbidity or cause pollution. This can include activities like oil and gas drilling, ocean dumping and dredge disposal, and sand mining. Fortunately, scallops are found in deeper water (25 to 40 fathoms) and offshore activities have been limited. Oil and gas exploration in the 1970s was unsuccessful and has had little cumulative effect over the long term. Likewise, ocean dumping, dredge disposal, and sand mining have rarely occurred in scallop resource areas, or have been discontinued. Cable laying which crosses scallop resource areas, particularly off the NJ coastline, has had limited cumulative effects in both the size and duration of impacts, although scallop fishermen have to be careful about fishing where overseas telecommunication cables exist.

6.3.7.1.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

Amendment 10 to the Sea Scallop FMP was submitted by the Council in December 2003 and is presently under review by the Secretary of Commerce. The interaction between the proposed action, Amendment 10, and framework adjustments that might occur under Amendment 10 regulations is an important aspect of the cumulative effects analysis. According to Amendment 10, framework adjustments are planned to occur every two years to adjust DAS allocations, close and re-open rotation areas, and make other management changes to achieve the resource-wide annual fishing mortality target and optimum yield. A more detailed description of Amendment 10 is presented in Section 3.2.1.5. Other than the framework adjustments, other scallop management actions are not expected, but may be considered in future framework actions or amendments.

Area access to portions of Closed Area I, Closed Area II, and the Nantucket Lightship Area would allow Amendment 10 and future framework adjustments to achieve the plan objectives with more scallop biomass in open fishing areas. This outcome is expected because the resource wide fishing mortality target can be achieved with fewer DAS being fished in the open areas, reducing scallop mortality. A greater scallop biomass in the open areas potentially means that rotation area management would be more effective, increasing the yield of scallops from open areas as well as the proposed access areas. Also, since the 4" rings required under Amendment 10 are more efficient when large scallops (> 110 mm shell height) are available, the expected benefits of the 4" rings in use within the open areas would be greater due to the higher amounts of large scallops.

Conversely, if there are more areas with large scallops open to fishing, fewer rotation closed areas would be needed to achieve the plan objectives and optimum yield. It would therefore be less likely that more rotation closed areas are needed to postpone mortality on small, fast-growing scallops, making more of the scallop resource available for fishing at any one point in time.

Amendment 13 to the Multispecies FMP was also submitted by the Council in December 2003 and is presently under review by the Secretary of Commerce. An interaction between groundfish management and the ability to fish for scallops is also an important consideration. The quicker that the proposed groundfish regulations rebuild the groundfish stocks, the more likely it is that restrictions on scallop fishing (a gear capable of catching some groundfish species) would continue in their present form or level. For example, as groundfish biomass increases, the groundfish catches on scallop trips would also rise and perhaps lead to an increase in the current 300 lb. groundfish possession limit on scallop trips. It also might reduce the need for continuing the year around groundfish mortality closed areas, or some portion of them. This may make parts of the scallop resource routinely available for scallop fishing without some of the measures that are currently required in the proposed action.

Conversely, the Framework Adjustment 16/39 proposed action includes important restrictions on groundfish catches in the access program, to prevent the scallop fishery from affecting the anticipated groundfish rebuilding from Amendment 13 measures or from affecting potential Special Access Programs using Multispecies “B” days⁶³. Depending on where and when fishing occurs and the species in the catch, the proposed action may even reduce mortality for some groundfish species. This in turn, could improve the ability of Amendment 13 to promote groundfish rebuilding and benefit the scallop fishery and resource when and if the groundfish restrictions are adjusted to reflect a rebuilt stock status.

In addition to the proposed management measures for multispecies limited access vessels, Amendment 13 re-opens an area off Southern New England for scallop fishing by vessels with general category scallop permits. Up until now, this area had been closed to scallop fishing for vessels not on a DAS because the area did not allow fishing with small mesh (including dredges with 3½” rings). This action may have a cumulative effect by allowing or inviting more scallop fishing by vessels with general category scallop permits. Alternatively, it could encourage more vessels to obtain an open access general category permit to target scallops or encourage more investment by vessels that already have the permit (there are no limits on vessel upgrading, except those that might apply by the vessel having another permit). Either of these effects could increase scallop mortality from vessels not fishing on a DAS, potentially causing a reduction in limited access DAS allocations or adjustments to other measures to compensate and prevent overfishing the scallop resource.

Conversely, there is a cumulative effect from the proposed action allowing vessels with general category scallop permits to fish in the proposed access areas. The re-opening of Southern New England waters for scallop fishing by vessels with general category permits, coupled with the proposed access program, could encourage capitalization in an open access fishery, more than with either action alone. Nonetheless, scallop fishing mortality from catches on vessels with general category permits is a small fraction of the overall scallop mortality. Plus, under Amendment 10 regulations, vessels with general category permits would be required to upgrade the gear to 4” rings and 10” twine top mesh to target scallops with a small dredge, and install VMS monitoring equipment to fish in the controlled access areas. These factors taken together suggest that the cumulative effect is likely to be small in the short term and manageable in the long-term.

⁶³ Amendment 13 reclassifies multispecies DAS as “A” and “B” days. Under the amendment, “B” days may be used in special access programs designed to avoid catching overfished groundfish stocks.

There are no other management actions on the horizon that are likely to have a cumulative effect on the scallop fishery and the scallop resource. One FMP that could have an impact, amendments or framework adjustments to the Monkfish FMP, have no rule changes under development that are likely to effect scallop fishing. Therefore the Council believes that although there are cumulative effects that could occur as the result of simultaneous implementation of the proposed action and future fishery management actions, these effects are unlikely to be significant.

As discussed in more detail in the Amendment 10 FSEIS, scallops are particularly susceptible to changes in water quality and clarity, as well as thermal shock, or moderate to significant burial by sediments. Therefore activities in about 20 to 40 fathoms of water (with shallower areas in the Gulf of Maine) that cause a degradation of water quality, increases in turbidity, thermal shocks, or burial could have a cumulative effect on the scallop fishery and the scallop resource. For example, changes in the environment that cause changes in growth rates, natural mortality, of meat yield, could have a cumulative effect on rotation area management. Areas might have to re-open quicker than anticipated to catch scallops earlier if the mortality rate increases due to an offshore activity. Such an event could also decrease the expected benefits of the proposed area access program. Slower growth rates could likewise decrease the potential benefits of rotation area management.

Types of activities could include construction in the nearby marine environment, sand dredging and ocean dumping, oil and gas exploration, and burial of pipelines or telecommunication cables across important scallop beds. At the present time, the Council is not aware of pending applications for Federal permits of these types in the scallop resource areas. There has been discussion with the Council in the past two years about a potential construction of a gas pipeline near or on Georges Bank, but this is in the preliminary stages of evaluation and may require some forethought about potential effects on scallop resources.

6.3.7.1.4 Summary of cumulative effects for the scallop resource

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1 and 6.2.1) Reduces the scallop biomass in open fishing areas, increasing the need for rotation closures and making it more difficult to achieve optimum yield.	Unlikely to be significant under present resource conditions, because recent scallop recruitment in open fishing areas has been above average.
Area access alternatives		Sections 4.1.1 & 4.2.2	(Sections 6.1 and 6.2.2)	
Alt 1 – Access area boundaries consistent with the habitat closures in A10 and FW 13	NPA	Section 4.2.2.1	Access to the scallop resource is less because some access areas would be located where scallop fishing is prohibited by Multispecies FMP.	Not expected to be significant because the overlap in the Multispecies EFH closed areas and the FW13 access areas is a small part of the overall resource.
Alt 2 - Access area boundaries consistent with the habitat closures described in A13	NPA	Section 4.2.2.2	Allows greatest access to the scallop resource, but could increase groundfish mortality and have a greater cumulative effect on groundfish rebuilding.	Not expected to be significant because scallop fishing in areas with low scallop biomass is unlikely.
Alt 3 – FW 13 access area boundaries consistent with habitat closures in both FMPs	NPA	Section 4.2.2.3	Same as Alternative 1	Same as Alternative 1
Area access are boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NSLA and the northern part of CA I	PA	Section 4.1.1	Reduces cumulative effects by matching the access areas with the EFH closed areas in the Multispecies FMP, while also minimizing potential groundfish bycatch in areas with low scallop biomass.	Not expected to be significant because bycatch is minimized and access avoids access in areas characterized as sensitive and complex habitat by Amendment 10. Scallop TACs are near the maximum level for any alternative.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Sections 4.1.2 & 4.2.3	(Sections 6.1 and 6.2.3)	
Habitat closed areas consistent with the Framework Adjustment 13 Scallop Closed Area access program (Status quo; Approval of Amendment 10 only)	NPA	Section 4.2.3.1	This would increase the amount of area where scallop fishing with dredges and trawls (gears having an adverse habitat impact) is prohibited, increasing protection of EFH relative to other alternatives.	Not expected to be significant because the additional areas would potentially be open to fishing by other bottom tending gears that have an adverse impact on EFH.
Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	This alternative would improve the practicability of the EFH closed areas in Amendment 13 to the Multispecies FMP, reducing the effects on the scallop industry.	The additional areas where scallop fishing would be allowed are offset by areas classified as EFH closed areas in Amendment 13. Changes in scallop yield and the effect on the scallop resource is therefore insignificant.
Habitat closed areas consistent with Amendment 10 to the Sea Scallop FMP and with Amendment 13 to the Northeast Multispecies FMP	NPA	Section 4.2.3.3	Same as status quo.	Same as status quo.
Gear Restrictions		Section 4.1.3	(Sections 6.1 and 6.2.4)	
Limited access vessels must use dredges only	PA		Reduces groundfish bycatch and mortality, potentially allowing quicker rebuilding of overfished groundfish stocks. On the other hand, this measure could increase fishing effort in the Mid-Atlantic region (if the access program catches reach the yellowtail flounder TAC), where sea turtles are more prevalent.	No cumulative effect on the scallop resource or fishery is anticipated.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Groundfish Catch Limits		Sections 4.1.4 & 4.2.5	(Sections 6.1 and 6.2.5)	
Hard TAC for yellowtail flounder bycatch; areas close to scallop fishing without transfer of unused DAS to open areas	NPA	Section 4.2.5.1	Measures to limit groundfish bycatch in the access program could limit access to the scallop resource, keeping actual scallop mortality below optimal levels.	Not expected to be significant because future framework actions would take into consideration the amount and distribution of scallop biomass.
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to the difference in open area DAS with and without access to achieve the annual fishing mortality target for the resource (20 DAS in 2004, for example)	PA	Section 4.1.4	<p>Limit on number of trips that a vessel may transfer from closed controlled access areas to open areas prevents overfishing of scallop resource in open areas. In addition, limits on number of trips could keep the open area scallop mortality below the amounts estimated without access to the Georges Bank groundfish closed areas. Proposed action would allow Scallop FMP to achieve optimum yield. However, optimum yield may not be achieved in the controlled access areas if the areas are closed early in the fishing year because the hard TAC is achieved before access area DAS for scallopers are used.</p> <p>Vessels that take no trips would have different impacts from the vessels that fish in the access areas, because they could transfer only a portion of their unused controlled access DAS to fish in open scallop areas.</p>	<p>Any displaced effort to open areas as the result of the hard TAC for yellowtail flounder being reached would be within the range of effort allocated by the FMP and would not result in a significant cumulative effect.</p> <p>Furthermore, no loss of scallop fishing effort in the controlled access areas as a result of the hard TAC being reached early in the fishing year would result in a significant cumulative effect.</p>

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by fleet-wide DAS use to take remaining trips in open areas	NPA	Section 4.2.5.2.2	Unused DAS by all vessels are treated equally, but the same amount of DAS could be transferred to fish in open fishing areas.	Like the above alternative, the transfer option is unlikely to result in a significant effect.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by expected landings per DAS to take remaining trips in open areas	NPA	Section 4.2.5.2.3	Same effect as above alternative, but the calculation is based on pounds of potential scallop landings, rather than an effort cap.	Same as above.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer all unused controlled access DAS allocations in open areas	NPA	Section 4.2.5.2.4	This non-preferred alternative could increase fishing effort to unanticipated levels, compared to the Amendment 10 analysis.	Since effort and bottom contact could increase beyond those estimated in the Amendment 10 FSEIS, this alternative was not approved and therefore has no significant cumulative effect.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Could allow greater access to the scallop resource than otherwise possible, improving the ability for the proposed action to achieve optimum yield.	Not expected to be significant because it reduces the risk that areas might close early when yellowtail flounder catches reach the TAC, but it would not change scallop mortality from those expected in the analysis.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	Allows scallop research and research compensation trips to occur in the proposed access areas, by matching the bycatch set-aside with the scallop set-aside.	Not expected to be significant because it does not change the expected scallop mortality.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Could improve access to the scallop biomass in the proposed access areas by prolonging the fishery before the yellowtail flounder catches reach the TAC.	Not expected to be significant because it reduces the risk that areas might close early when yellowtail flounder catches reach the TAC, but it would not change scallop mortality from those expected in the analysis.
Finfish possession limits		Sections 4.1.5 & 4.2.6	(Sections 6.1 and 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	Reduces bycatch mortality, but no effects on the scallop resource or fishery are anticipated.	Not expected to be significant because it should not change fishing behavior.
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	Prevents inadvertent and unintentional violations for making cod chowder or being caught with recently caught cod before having a chance to discard them.	Same as above.
Access Seasons		Sections 4.1.6 & 4.2.7	(Sections 6.1 and 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	Potentially reduces groundfish bycatch and avoids possible disruptions to peak groundfish spawning, but increases fishing effort when scallop meat yield is seasonally low. This may increase the scallop fishing mortality associated with the proposed scallop TACs.	Not expected to be significant because future framework adjustments would take into account changes in scallop biomass and distribution.
At-Sea Observers, TAC Set-Aside, And Fishery Monitoring		Sections 4.1.7	(Sections 6.1 and 6.2.8)	
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	No cumulative effects on scallop resource or fishery are expected.	None.
Enforcement Provisions		Sections 4.1.8	(Sections 6.1 and 6.2.9)	
Trip declaration and notification	PA	Section 4.1.8.1	Same as above.	None.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	None.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	None.
Reporting Requirements		Sections 4.1.9	(Sections 6.1 and 6.2.10)	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	None.
Vessel trip reports	PA	Section 4.1.9.2	Same as above.	None.
Mechanical rotation alternatives		Section 4.1.10	(Sections 6.1 and 6.2.11)	
Amendment 10 rotational access to portions of CA I, CA II, and the NLSA beginning with CA I and the NLSA in 2004, and CA II in 2005-2007	NPA	Section 4.2.11.1	The alternative would result in higher yield and DAS allocations when CAI and the NLSA would be open for fishing in 2004, and lower yield and allocations in 2005-2007.	Not expected to be significant because the overall scallop yield potential over time is nearly the same as expected for the rotation alternative below.
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	New rotation schedule would even out DAS allocations and expected yield. It would also reduce the likelihood of an area closing because yellowtail flounder catches reached the TAC.	Not expected to be significant because the overall scallop yield potential over time is nearly the same as expected for the rotation alternative above.
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	(Sections 6.1 and 6.2.12)	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Number of scallop trips and DAS allocations are expected to be the same as those under the status quo. Part-time vessels would see an allocation increase and occasional vessels would see an allocation decrease compared to the Amendment 10 allocation strategy, both to be consistent with the open area access policy in the FMP.	No effect on the scallop fishery and resource is expected.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Access for general category vessels		Section 4.1.11	(Sections 6.1 and 6.2.13)	
Access with enhanced reporting and a 2% TAC set-aside	PA		Overall scallop mortality is expected to be the same, but the set-aside has the potential to reduce the number of trips and DAS that would be allocated to limited access vessels.	No effect on the scallop resource is expected and the set aside is a small amount of the overall landings, which could be landed by vessels with general category permits. Cumulative effects are therefore insignificant.

6.3.7.2 Scallop fishing fleet and infrastructure (suppliers, maintenance, facilities, processors)

6.3.7.2.1 Direct and Indirect Impacts of the Proposed Action

The aggregate economic impacts of the proposed rotation schedule with access to the Georges Bank groundfish areas on scallop fishery, vessel revenues, costs, and gross profits are examined in Section 6.2.1.4. The combined impacts of the proposed access to the Georges Bank groundfish areas will be positive on scallop fishing fleet and suppliers. Even though the proposed rotation strategy with access will generate marginally lower revenues from scallop fishing compared to no access during the 2004-2007 period, it will also lower the fishing costs. Because of the greater scallop abundance and LPUE in the Georges Bank groundfish areas, it will take less time to catch scallops in these areas compared to the open areas. As a result, the operating expenses per pound of scallops are estimated to decline, and gross profits are expected to increase. In addition, the size of the scallops landed from the access areas will be larger, and larger scallops could be sold at a price premium, benefiting the scallop fleet, dealers and processors.

Although access may reduce the total crew DAS worked in the scallop fishery, it is uncertain to what extent this reduction would translate into a reduction in the total number of crew employed in the scallop fishery. On the income side, the impacts from access will be positive. Crew income is estimated to increase both during the 2004-2007 period and over the long-term because of lower trip expenses with access.

By increasing the scallop catch rates in the long run and reducing operating costs, the proposed measures are expected to increase the productivity of the scallop industry and have positive long-term impacts on the scallop fleet and infrastructure. Indirect impacts of the proposed access and rotation schedule and other measures 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 increase in the gross profits and income of the scallop fleet will have positive economic benefits on these sectors as well. The increase in revenues and regional incomes through the multiplier impacts may also lead to an increase in employment in sectors with backward or forward linkages to the scallop fishery.

The direct and indirect impacts of the individual measures considered by this Framework, including mechanical rotation alternatives, area-access options, habitat closures, gear restrictions, access seasons, groundfish catch and possession limits, fishery monitoring and enforcement provisions, trip allocations for part-time and occasional vessels, general category and other proposed measures, are analyzed in relevant subsections of Section 6.2.

6.3.7.2.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

The long-term cumulative effects of past actions, including Amendment 4 and Amendment 7 to the Sea Scallop FMP, were positive for the scallop fleet and infrastructure. Amendment 4 instituted a limited access program and established a fishing effort reduction schedule in order to lower scallop fishing mortality and increase yield. Framework 1 reduced the maximum crew limit from 9 to 7 in order to lower the fishing mortality on small scallops. Amendment 7 revised the DAS-reduction schedule in order to meet the mandates of the Fisheries Sustainable Act of 1996. In addition to these actions, the Nantucket Lightship Area, CAI and CAII were closed to scallop fishing beginning in 1994, first by an emergency action, and later by Amendment 7 to the Multispecies FMP. These actions were successful in

lowering fishing effort and mortality in the scallop fishery. During the years following these actions, however, scallop fleet landings and revenues continued to decline due to the high fishing effort and unsustainable landings during 1987 to 1992. The closures of the Georges Bank groundfish areas and the reductions in fishing effort also contributed to this decline in the short-term. Scallop landings reached their lowest level in a decade with only about 12.5 million lbs. in 1998, which was less than one half of what it had been during the period from 1987 to 1992. The fleet revenue declined to \$76 million in the same year.

As the scallop resource rebounded, however, due to the effort reduction measures of Amendment 7 and groundfish area closures since 1994, combined with an above-average recruitment, the scallop landings increased dramatically to more than 22 million lbs. in 1999 and to over 32 million in 2000. As a result, the scallop fleet revenue reached \$120 million in 1999 and \$160 million in 2000. The increase in the scallop biomass helped the scallop fishery to become more productive and profitable by increasing landings per DAS (LPUE) and by reducing fishing costs per pound of scallops. The opening of the southern part of CAII to scallop fishing in 1999 by Framework 11, and later, extension of access to parts of the Nantucket Lightship Area and Closed Area I by Framework 13 played an important role in increasing fleet revenues and the economic benefits from the scallop resource. Scallop landings reached 47 million lbs. and the fleet revenue more than doubled increasing to \$173 million in 2001, despite the decrease in scallop prices by 40% from their 1998 level. Scallop fishing fleet also benefited from the lower costs of fishing. The yield per day-at-sea (LPUE) improved dramatically from about 450 lbs. per day-at-sea in 1994 to more than 1,200 lbs. per day-at-sea in the 2001 fishing year, lowering the operational costs (such as fuel, oil, water, ice and food) per pound of scallops. As a result, profits of the scallop vessels and incomes of the crewmembers continued to increase significantly after 1998.

The Framework 14 action revised the DAS schedule in Amendment 7 to the Scallop FMP and increased the allocations to be consistent with the recent improvements in the scallop abundance levels. Also, the Hudson Canyon and VA/NC areas were reopened to scallop fishing through a controlled access program. Framework 15 continued this program in 2002. The cumulative impacts of these actions on the scallop fleet and infrastructure continued to be positive. The landings reached record levels, 52 million in 2002, and fleet revenues increased to \$202 million in the same year, with similar estimates for 2003. In conclusion, the cumulative impacts of the past and present actions were positive for the scallop fleet and for related sectors including dealers, processors, primary suppliers to the vessels that sell them gear, engines, boats, etc. There were no other Federal or non-Federal actions that had any significant impacts on the scallop fleet and infrastructure.

6.3.7.2.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

Amendment 10 allows the Council to make adjustments to DAS allocations, to close or reopen areas, or take other management actions through Framework adjustments every two years in order to achieve the optimum yield from the fishery. Closing of areas with small scallops and allowing access to high scallop abundance areas of Georges Bank and the Mid-Atlantic is expected to increase the cumulative benefits for the scallop fleet and infrastructure in the long-term by redistributing scallop fishing to more productive areas. Fishing in areas with high catch rates (LPUE) is expected to reduce fishing costs and increase profits and crew incomes over the long-term. The short-term impacts could differ from the long-term impacts, however. DAS allocations and area-specific possession limits could be lowered, boundaries of controlled access areas could be revised, reopening and closing schedules could be changed by future Framework actions if recruitment and stock biomass conditions necessitate such adjustments. Such actions could have negative impacts on scallop landings and revenues in the short-term, reducing beneficial cumulative impacts on the scallop fleet and infrastructure. It is not possible to predict short-term impacts with certainty, however, since they could as well be positive depending on the changes in the scallop stock biomass and fluctuations in recruitment.

In addition to the future scallop frameworks, Amendment 13 to the multispecies fishery and future regulations for this fishery are expected to have impacts on the scallop fleet and related sectors. Rebuilding of the groundfish stocks through these actions could have positive impacts on the scallop fishery by reducing the need for extensive closures in the Georges Bank groundfish areas. On the negative side, opening of Southern New England for scallop fishing by vessels with general category permits through Amendment 13 may increase fishing effort and mortality on scallops. Such a negative impact could cause a reduction in DAS allocations or area-specific possession limits for limited access vessels, lowering the positive impacts of the management actions on the scallop fleet and infrastructure. Because the general category vessel landings do not constitute a significant proportion of the overall scallop landings, such changes are not expected to have significant cumulative impacts, however.

There are no other foreseeable future actions that could have significant cumulative effects on the scallop fishery and resource. Therefore, no significant cumulative impacts are expected from other actions on the scallop fleet and infrastructure because these impacts generally occur through changes on the scallop fishery and resource.

6.3.7.2.4 Summary of cumulative effects for the scallop fishing fleet

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1.4 and 6.2.1) Reduces positive cumulative impacts on the scallop fleet and related industries, producer benefits, gross profits and crew incomes due to higher fishing costs in the open areas. May increase the cumulative impacts on employment because of higher DAS allocations, however.	Not expected to be significant. The present conditions of the scallop resource and the level of DAS allocations in the open areas are expected to generate landings and revenues comparable to the rotation schedule with access, but at higher fishing costs.
Area access alternatives		Section 4.1.1 & 4.2.2	(Sections 6.1.4 and 6.2.4)	
Alt 4 - Area access boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the Nantucket Lightship Area and the northern part of CA I	PA	Section 4.1.1	Increases positive cumulative effects by providing greater access to the scallop resource in more productive areas, reducing fishing costs, and increasing gross profits and crew incomes. It could reduce the cumulative impacts on employment in the scallop fishery due to lower DAS allocations, however.	Not expected to be significant because the level of scallop landings, revenues and costs will be close to what is expected under other access alternatives and under no access.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Section 4.1.2 & 4.2.3	(Sections 6.1.4 and 6.2.3.4)	
Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	Proposed closure increases positive cumulative effects by allowing greater access for scallop fishing in relatively more productive Georges Bank groundfish areas that were closed to fishing since 2001. Reduces fishing costs and increases gross profits and crew incomes in the scallop fleet. It will have indirect positive impacts on scallop infrastructure and related sectors, and will increase overall cumulative effects.	Because changes in scallop landings and revenues are expected to be small compared to status quo and other alternatives, cumulative impacts on the scallop fleet and the infrastructure are not expected to be significant.
Gear Restrictions		Section 6.2.4		
Limited access vessels must use dredges only	PA	Section 4.1.3	Indirect positive cumulative impacts on the scallop fleet as a whole by minimizing the risks for high finfish bycatch and therefore, the risk of a premature closure of Georges Bank groundfish areas before the scallop TAC is reached. Could have negative impacts on the scallop trawl sector.	No significant cumulative impacts on the scallop fleet and infrastructure are expected due to limited numbers of scallop trawls and mitigating factors.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
		Section 4.1.4 & 4.2.5	Section 6.2.5	
Groundfish Catch Limits				
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to 20 days at sea	PA	Section 4.1.4	Indirect positive impacts by keeping bycatch from exceeding finfish quotas, and reducing the risks of early closures of Georges Bank groundfish areas to scallop fishing. The option to transfer DAS to open areas in case of closures will minimize negative impacts on the scallop fleet.	Early closure of the Georges Bank groundfish areas will not result in a significant reduction in landings and revenues from the scallop fishery due to the DAS transfer option. Therefore, no significant cumulative effects on the scallop fleet and the infrastructure are expected from this measure.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Will increase positive impacts on the scallop landings and revenues than otherwise possible by extending the season for scallop fishing.	No significant changes in scallop landings, revenues and fishing costs are anticipated from this measure. Therefore, cumulative impacts are not expected to be significant.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	Indirect positive impacts on the scallop fleet through improved research and management of the scallop resource.	No significant changes in scallop landings, revenues and fishing costs are anticipated from this measure. Therefore, cumulative impacts are not expected to be significant
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Indirect positive impacts on the scallop fleet by helping to reduce bycatch and the risks of early closure of Georges Bank groundfish areas.	Cumulative impacts are not expected to be significant because no significant changes in scallop landings, revenues and fishing costs are anticipated from this measure.
		Section 6.2.6		
Finfish possession limits				
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	Indirect positive impacts by reducing regulatory discards, but no effects on scallop landings, revenues, fishing costs.	No significant cumulative impacts are anticipated on the scallop fleet and infrastructure because the overall scallop landings, revenues and fishing costs will not change in any significant way.
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	Indirect positive benefits on the scallop fleet and crew by eliminating unintentional violations.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Access Seasons		Section 4.1.6 & 4.2.7	Section 6.2.7	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	Indirect positive impacts by prohibiting scallop fishing when many species of groundfish are at peak spawning activity, thus by making access to the Georges Bank groundfish areas more acceptable. Simultaneous access to all Georges Bank groundfish areas will have positive impacts on the scallop fleet by providing more flexibility to fishermen to maximize their landings and revenues from these areas.	No significant cumulative impacts are anticipated on the scallop fleet and infrastructure because the overall scallop landings, revenues and fishing costs will not change in any significant way because of seasonal distribution of fishing activity.
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	No cumulative effects on scallop fleet and infrastructure are expected.	None.
Enforcement Provisions		Section 4.1.8	Section 6.2.8	
Trip declaration and notification	PA	Section 4.1.8.1	Indirect positive impacts through improved management.	No significant cumulative effects on scallop fleet and infrastructure are expected.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	Same as above.
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	Same as above.
Reporting Requirements		Section 4.1.9	Section 6.2.9	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	Same as above.
Vessel trip reports	PA	Section 4.1.9.2	Same as above.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Mechanical rotation alternatives		Section 4.1.10	Section 6.1.4 and 6.2.10	
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	Positive cumulative impacts by reducing the likelihood of significant scallop revenue loss from closure of access areas due to high of yellowtail bycatch. Indirect positive impacts by providing more stability to the vessel business operations through more even annual allocations for the access areas during the access program.	No significant cumulative effects are expected because the scallop landings, revenues and fishing costs will not change significantly from what has been estimated for the Amendment 10 rotational access to the portions of Georges Bank groundfish areas.
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	Section 6.2.12	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Positive economic impacts on the part-time limited access fleet and negative impacts on the occasional permit category vessels. No significant impacts are expected, however, on overall scallop landings, revenues and fishing costs, thus no effects on the scallop fleet and infrastructure as a whole.	No significant cumulative effects are expected because the scallop landings, revenues and fishing costs will not change significantly compared to levels estimated with Amendment 10 trip allocation system.
Access for general category vessels			Section 6.2.13	
Access with enhanced reporting and a 2% TAC set-aside	PA	Section 4.1.11	Increase the revenues of the general category vessels by allowing access. Also will increase the costs of fishing for these vessels due to VMS and other reporting requirements. The impacts on the limited access scallop fleet are expected to be minimal.	Cumulative effects on the scallop fleet and infrastructure are not expected to be significant because scallop landings, revenues and fishing costs will not change significantly due to access by general category vessels.

6.3.7.3 Vulnerable finfish resources caught as bycatch in the scallop fishery

6.3.7.3.1 Direct and Indirect Impacts of the Proposed Action

Sections 6.1.1.2 and 6.1.1.3 describe and summarize the expected biological impacts on finfish species that are often caught in scallop fishing gear in the access areas, focusing on the preferred alternatives. The proposed action is intended to improve and maintain high scallop yield, while minimizing impacts on groundfish mortality and other finfish catches. Proposed management measures include seasonal restrictions, sea sampling, and yellowtail flounder TACs to ensure that the finfish catches do not rise to levels that would cause a substantial increase in groundfish fishing mortality or threaten the rebuilding expected by Amendment 13.

Access may even reduce fishing mortality for some finfish species, because the total amount of fishing time in the access areas is very low compared with the expected reduction in fishing time in open fishing areas of the Georges Bank and Mid-Atlantic regions. This occurs because the high catch rates in the proposed access areas, coupled with crew limits that dictate how much scallops a vessel can process, causes the fishing time per DAS to decline, relative to the amount of fishing time on a DAS in the open areas.

Section 7.1.4 summarizes the overall impacts on skate mortality from this action. The Skate PDT concluded that this action is not expected to have negative impacts on skates in a formal rebuilding program (thorny and barndoor). A small percentage of the overall distribution of both thorny and barndoor skates overlaps with the proposed access areas, and areas with intense scallop fishing effort in 2000. While total allocated DAS is expected to slightly increase in 2004 as compared to the level assessed in the skate baseline, allocated DAS will reduce substantially after 2004 under a rotational area management strategy. If scallop management continues to focus effort in areas with high scallop biomass, overall impacts on skate mortality may decline because actual fishing time will be reduced, potentially decreasing skate bycatch levels.

6.3.7.3.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

A brief summary of the cumulative effect of past and present scallop management on total effort allocations, on the scallop resource, and on fishing time is given in Section 6.3.7.1.2, with a more detailed description of the management actions in Section 3.2.1. Most relevant to the cumulative effects on vulnerable finfish resources, caught as bycatch in the scallop fishery, are the reductions in total effort allocations, gear changes that allow more escapement and better survival of finfish, and the effect of the groundfish closed areas on scallop fishing.

Since 1994, the amendments and framework adjustments to the Scallop FMP have reduced effort allocations and lowered the scallop fishing mortality rate to stop overfishing and rebuild the scallop resource. Not only has the total amount of nominal effort declined from 45,000 days-at-sea to 22,000 days-at-sea in 1999, rising to about 30,000 days-at-sea in 2003, but the amount of fishing time (measured as total area swept) has declined by a greater amount. Total area swept was estimated to be about 12,000 nm² in 1999 and has since declined to 4,800 nm² in 2003. This has occurred because of the controlled access programs in Framework Adjustments 11, 13, 14, and 15 using a day-at-sea tradeoff and also because the scallop biomass in open fishing areas has risen from the rebuilding program. Catches in many areas have begun to exceed the crew's shucking capacity, which causes vessels to fish less time per DAS.

Finfish catches are proportional to the amount of actual fishing effort and have probably declined as the management measures in the Scallop FMP reduced total fishing effort. Due to low sea sampling for the scallop fishery on open area trips and because discard estimates from vessel trip reports have been unreliable, this change has been difficult to document, however.

Increases in scallop biomass and catch per DAS have also had beneficial effects on finfish that are frequently caught by scallop dredges. When the scallop resource was overfished, scallop catch rates and revenue were low compared to other opportunities that existed in the early to mid 1990s. At various times, often seasonally, scallop fishing vessels targeted finfish with a dredge rather than scallops, particularly for monkfish, yellowtail flounder, gray sole, and American plaice which are easy to catch with dredges. Sometimes the vessel would target these species as a component of the catch while fishing for scallops and at other times the vessel would use a scallop DAS to target these finfish rather than scallops. Trip limits greatly curtailed this targeting of finfish with scallop dredges, but increasing scallop biomass made it less profitable to do so anyway.

During this time, greater gear restrictions also probably had a beneficial effect on finfish resources, by reducing catches of particularly small finfish. Two major changes are important. First, much of the chafing gear, donuts, cookies, and triple rings were prohibited by Amendment 4 in 1994. While intended to reduce catches of small scallops, these changes probably also benefited finfish. Since then, the framework adjustments increased the minimum twine top mesh (an important area of the dredge for finfish escapement for some species) from 6 to 8 inch mesh. Again, although there were sea trials comparing twine top mesh, the benefit to finfish species was not well documented due to low sea sampling and unreliable VTR discard estimates.

Lastly, the groundfish closed areas in the Georges Bank region also had an important effect, since Multispecies FMP banned fishing with scallop fishing gear in these areas. This action probably reduced groundfish bycatch for species that are more abundant in the groundfish closed areas and probably decreased groundfish catches in the overall scallop fishery, because much of the fishing effort shifted to the Mid-Atlantic region around that time. On the other hand, the closed areas may have caused scallop fishing to intensify in other parts of the Georges Bank region, particularly in the Great South Channel, on the Southeast Part and along the northern edge of Georges Bank, near Closed Area I and the Cod HAPC. Species that are more abundant in these areas that remained open probably saw an increase in fishing effort and bycatch.

The cumulative effects of the scallop management regulations and the groundfish closed areas are likely to have had a very beneficial effect on reducing mortality on overfished groundfish. For a time, these measures may have increased fishing pressure on monkfish when scallop catches were low. The Monkfish FMP, however, recognizes that scallop vessels have historic participation in a fishery targeting monkfish and have allowed some scallop vessels to qualify for a limited access monkfish permit.

6.3.7.3.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

Section 6.3.7.1.3 describes the expected effects of Amendments 10 and 13 on the scallop fishery, which in turn could have a cumulative effect on vulnerable finfish, either through incidental catches while scallop fishing or through minimizing adverse impacts on EFH. Amendment 10 sets new limits on DAS use, focuses fishing effort on areas where the daily catches of large scallops are highest, and increases the minimum twine top mesh from 8 to 10 inches. Future framework adjustments will be needed to establish new closed rotation areas and set DAS allocations to achieve optimum yield. Depending on where these areas are located and how the effort allocations are distributed, the incidental finfish catches in the scallop fishery are expected to remain low, and may even decline.

Amendment 13 has few new effects on the scallop fishery that might have a cumulative effect on finfish resources. One that could have an effect is an alternative that would open waters off Southern New England to scallop fishing by vessels having a general category scallop permit. Analysis in Amendment 13, however, shows that the groundfish catches in this new fishery are expected to remain below acceptable levels and have little effect on groundfish mortality or rebuilding potential.

The cumulative effect of these future actions is expected to keep finfish mortality in the scallop fishery lower than it has been historically, and possibly even reduce it from current levels. Although the proposed action in this framework adjustment would allow access to portions of the groundfish closed areas, the restrictions are expected to keep finfish catches below levels that would cause changes in the cumulative effects of Amendments 10 and 13 on finfish resources.

6.3.7.3.4 Summary of cumulative effects for vulnerable finfish resources

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1 and 6.2.1) This alternative would keep effort in the open areas higher than with access, causing a reduction in open area scallop biomass, and an increase to total fishing time and finfish bycatch. Species that are more abundant in the groundfish closed areas would enjoy greater conservation.	Not expected to be significant because the Amendment 13 rebuilding program was designed and analyzed as if the groundfish closed areas would not be fished by the scallop fishery.
Area access alternatives		Sections 4.1.1 & 4.2.2	(Sections 6.1 and 6.2.2)	
Area access are boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NSLA and the northern part of CA I	PA	Section 4.1.1	Compared with alternative 2, which would allow the most access, this alternative would prevent scallop fishing in areas where scallop biomass is low and groundfish catches could be higher than expected, based on the 2000 sea sampling data.	Cumulative effects are not expected to be significantly different that that expected from Amendment 13 management measures, because the proposed action would keep finfish catches below levels that could cause unacceptable increases in groundfish mortality and/or threaten the expected groundfish rebuilding.
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Sections 4.1.2 & 4.2.3	(Sections 6.1 and 6.2.3)	
Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	Improves the practicability of the EFH closed areas	Not expected to be significant because the decrease in protection of EFH in some areas of Closed Area I and the Nantucket Lightship Area would be offset by increases in protection in other parts of the areas.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Gear Restrictions		Section 4.1.3	(Sections 6.1 and 6.2.4)	
Limited access vessels must use dredges only	PA		Prohibiting trawls is expected to reduce finfish catches in the access areas, preventing impacts on planned stock rebuilding in the Multispecies FMP.	Not expected to be significant because Amendment 13 did not anticipate any scallop fishing in the groundfish closed areas and the alternative would help keep groundfish catches below an acceptable threshold.
Groundfish Catch Limits		Sections 4.1.4 & 4.2.5	(Sections 6.1 and 6.2.5)	
Hard TAC for yellowtail flounder bycatch; areas close to scallop fishing without transfer of unused DAS to open areas	NPA	Section 4.2.5.1	This alternative would minimize finfish catches, because no additional fishing could be transferred to open areas where groundfish and other finfish species exist.	The cumulative effect is not expected to be significant because catches with access will be limited and remain below levels that would increase groundfish mortality or threaten planned stock rebuilding.
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to the difference in open area DAS with and without access to achieve the annual fishing mortality target for the resource (20 DAS in 2004, for example)	PA	Section 4.1.4	Effort could increase in open fishing areas after the yellowtail flounder TAC for the area access program was caught.	Effort could not exceed levels expected by Amendment 10 and Amendment 13 without access and would not therefore be significant.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by fleet-wide DAS use to take remaining trips in open areas	NPA	Section 4.2.5.2.2	Same as above, but the same proportion of unused DAS could be transferred for all vessels.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by expected landings per DAS to take remaining trips in open areas	NPA	Section 4.2.5.2.3	Same as above.	Same as above.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer all unused controlled access DAS allocations in open areas	NPA	Section 4.2.5.2.4	Could cause effort in the open areas to exceed the amounts specified in Amendment 10, increase groundfish bycatch more than anticipated.	The amounts are unlikely to exceed the open area allocations after 2004, therefore the cumulative effects are not expected to be significant.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Could allow the scallop fishery to continue without causing effects on special access programs in the Multispecies FMP or causing groundfish mortality to exceed the rebuilding thresholds.	Not expected to have a cumulative effect, because groundfish mortality from all sources would not exceed the rebuilding thresholds in Amendment 13.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	Allows scallop research and research compensation trips without causing additional groundfish mortality.	Cumulative effect is not expected unless results are implemented as management measures that would minimize bycatch or bycatch mortality.
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Could reduce bycatch and/or improve survival of groundfish caught while scallop fishing in the access areas.	Little cumulative effect is expected because the actions would result in a longer fishery, taking more of the allocated scallop trips.
Finfish possession limits		Sections 4.1.5 & 4.2.6	(Sections 6.1 and 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	Minimizes bycatch by allowing scallop vessels to keep more of the finfish caught while targeting scallops.	Not expected to be significant because it does not change finfish mortality.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	Same as above.	Same as above.
Access Seasons		Sections 4.1.6 & 4.2.7	(Sections 6.1 and 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	Avoids peak groundfish spawning activity and may reduce discards.	Not expected to be significant because the yellowtail flounder catches (and by proxy other finfish catches) are limited by a TAC.
At-Sea Observers, TAC Set-Aside, And Fishery Monitoring		Sections 4.1.7	(Sections 6.1 and 6.2.8)	
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	Improves monitoring and bycatch estimate precision.	Not expected to be significant because it would not change mortality of groundfish and other species.
Enforcement Provisions		Sections 4.1.8	(Sections 6.1 and 6.2.9)	
Trip declaration and notification	PA	Section 4.1.8.1	Same as above.	None.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	None.
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	None.
Reporting Requirements		Sections 4.1.9	(Sections 6.1 and 6.2.10)	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	None.
Vessel trip reports	PA	Section 4.1.9.2	Same as above.	None.
Mechanical rotation alternatives		Section 4.1.10	(Sections 6.1 and 6.2.11)	
Amendment 10 rotational access to portions of CA I, CA II, and the NLSA beginning with CA I and the NLSA in 2004, and CA II in 2005-2007	NPA	Section 4.2.11.1	Fishing years when CAI and the NLSA would be open to fishing would have a greater probability of closing from yellowtail flounder catches, because of the higher fishing mortality targets according to this strategy.	Not significant because finfish catches and groundfish mortality are limited by the yellowtail flounder TAC.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	Evens out the controlled access effort allocations across years and reduces the likelihood that the yellowtail flounder catches will exceed the TACs.	Same as above.
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	(Sections 6.1 and 6.2.12)	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Adjusted allocation system will not change the total number of trips in the controlled access or open scallop fishing areas.	No cumulative effect is expected, because the total effort by area is not expected to change.
Access for general category vessels		Section 4.1.11	(Sections 6.1 and 6.2.13)	
Access with enhanced reporting and a 2% TAC set-aside	PA		If the access program encourages more investment in the open access fishery, it could cause the amount of scallop fishing in open areas to go up.	Not expected to be significant because there will be important compliance costs which could limit participation.

6.3.7.4 Essential Fish Habitat (EFH) for finfish, scallops, and shellfish under Federal management

6.3.7.4.1 Direct and Indirect Impacts of the Proposed Action

Section 6.1.2 describes and summarizes the expected impacts of this action on essential fish habitat, focusing on the preferred alternatives. This framework action proposes to modify the habitat closed areas originally proposed for implementation in Amendment 10 to the Scallop FMP to make them consistent with the habitat closed areas proposed in Amendment 13 to the Multispecies FMP. Elimination of the conflicts between the two FMPs will result in the closure of the same areas to gears used in both fisheries, thus providing more effective protection of benthic EFH from the adverse effects of fishing.

This framework action also proposes to provide access to the scallop fleet into portions of the groundfish mortality closed areas. Access into portions of the groundfish mortality closed areas has been granted to the scallop fleet in previous frameworks. Continued access was anticipated in the analysis of Amendment 10, therefore granting access through this framework will not increase impacts beyond that which was recognized as part of the Amendment 10 baseline. The specific access areas are slightly different than access areas in previous frameworks; the access area in the center of Closed Area I has shifted to the south, the access area in the Nantucket Lightship closed area has expanded to about one-third of the total closed area (eastern portion only), and the access area in Closed Area II is the same as in previous framework actions. According to the results of the EFH metric analysis, the EFH value of this access option is not significantly different from the EFH value of the other access options. The overall substrate composition of the four access alternatives is also similar; they are all primarily sandy bottom. More recent preliminary substrate data suggest that the southern portion of the Closed Area I proposed access area may be more complex than the area previously opened. Even if the proposed access alternative does open more complex bottom than previous access programs, it is probable that the overall habitat impacts are neutral because there is added habitat protection from the addition of habitat closed areas on Cashes Ledge, Jeffrey's Bank, and the northern part of the NLSP closed area (over 500 square nautical miles). These areas that were identified as important for habitat conservation represent a variety of substrate bottom that may compensate for the potential "loss" of the southern part of Closed Area I that is proposed for access (about 215 square nautical miles).

The EFH analysis shows that the total EFH area within the proposed access areas is slightly more than the access areas implemented in previous frameworks (Alternative 1). 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 does not outweigh the economic costs of preventing the scallop fleet from accessing this area. About 2/3rds of scallop biomass in the access boundaries for Closed Area I is within the southern part of the access area, therefore preventing access into this area is not practicable.

In addition to the DAS that scallop vessels will be granted in the framework, each vessel is also granted open access DAS (excluding the Hudson Canyon Area, Nantucket Lightship Area, Closed Area I, and Closed Area II). However, the proposed total number of open access DAS for the framework is less than the open access DAS allocation proposed in Amendment 10. For example, under Amendment 10 with no access, limited access vessels were granted 62 open DAS for FY2004, while this framework proposes only 42 open access DAS. This reduction of effort in outside areas is expected to have positive impacts on the complex bottom and sensitive habitats that are currently fished in outside areas like the Great South Channel and Fippennies Ledge. This reduction in bottom contact time in open areas occurs

because granting access in this framework action enables the FMP to reduce fishing effort allocations in open fishing areas.

Overall habitat impacts of all the measures combined in this action have neutral impacts on habitat, compared to the habitat benefits that will result from implementation of Amendment 10 of the Scallop FMP and Amendment 13 of the Multispecies FMP.

6.3.7.4.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

This section will focus on the past and present actions that affect management of habitats in this region. The management background of essential fish habitat is more thoroughly described in Section 3.2.5. In 1996, the Sustainable Fisheries Act (SFA) amended the Magnuson-Stevens Fishery Conservation and Management Act, and specific provisions were included in this amendment to emphasize the importance of essential fish habitat. To improve fish habitat the SFA requires or authorizes the Councils, NMFS, and other Federal agencies to take new actions to describe and identify EFH, minimize to the extent practicable adverse effects on EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of EFH. The New England Council implemented the EFH Omnibus Amendment in 1999 to comply with these requirements. Since 1996, the Council is required to assess whether actions have adverse impacts on EFH, and if so identify measures to minimize to the extent practicable adverse effects. All Amendments and framework actions since that time have evaluated the impacts of the action on EFH and assessed whether additional measures are necessary to mitigate adverse effects.

In addition to fishery management measures implemented under the Magnuson-Stevens Fishery Conservation and Management Act, NMFS is also responsible for reviewing both Federal and non-Federal activities that may adversely affect EFH, and providing conservation recommendations as appropriate. For example, the Habitat Conservation Division of NMFS reviews any offshore or coastal activity that requires a Federal permit, such as dredging, beach nourishment, and construction of docks and piers within coastal habitats. Conservation measures may be recommended to avoid, minimize, or mitigate adverse effects on EFH.

6.3.7.4.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

Both Amendment 10 to the Scallop FMP and Amendment 13 to the Multispecies FMP are major actions that were determined to have significant impacts on fishery resources as well as fishing communities. Amendment 10 to the Sea Scallop FMP and Amendment 13 to the Multispecies FMP were recently approved by the NMFS. It was determined that the gears used in both these fisheries impact the EFH of some species in the region that have EFH vulnerable to bottom tending gears. Therefore these two documents identified several specific alternatives to minimize these impacts, to the extent practicable. Both Amendments propose to implement specific area closures for habitat, as well as effort reductions, and gear modifications to enhance EFH conservation.

The New England Council is also in the process of amending the EFH Omnibus Amendment implemented in 1999. This EFH Omnibus Amendment will comply with NMFS's published guidelines to review and revise EFH components of FMPs every five years, and to develop a comprehensive EFH management plan that will minimize the adverse effects of fishing on EFH that will apply to all Council-managed FMPs. Public hearings were held in March 2004, and the Habitat Plan Development Team, Habitat Advisory Panel, and the Habitat Committee of the New England Council are in the process of developing alternatives for the Amendment.

There are numerous actions proposed in the region, outside of the Federal fishery management arena, that may impact EFH. The Habitat Conservation Division of NMFS is currently reviewing projects such as dredging of Federal navigation channels, development of offshore wind power projects, offshore natural gas pipelines, and beach nourishment. With numerous projects like these occurring simultaneously within the region, there may be adverse effects on EFH as a result. The direct impact of these types of actions on this framework is unknown; however, the EFH Omnibus Amendment scheduled for completion in 2007 will evaluate projects like these and assess their overall impacts on EFH in the region.

6.3.7.4.4 Summary of cumulative effects for essential fish habitat

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1 and 6.2.1) Potentially negative impacts on EFH because fishing effort will increase in areas outside of access areas. If scallop fishing is focused in the most productive areas, long term impacts on EFH will be minimized, reducing bycatch and bottom contact time.	Unlikely to have significant impacts on EFH under present resource conditions. Since scallop abundance is relatively high in outside areas as well, bottom contact time will be less than in recent years.
Area access alternatives		Section 4.1.1 & 4.2.2	(Sections 6.1 and 6.2.2)	
Alt 1 – Access area boundaries consistent with the habitat closures in A10 and FW 13	NPA	Section 4.2.2.1	No cumulative effects on EFH, but this alternative is inconsistent with the habitat closed areas proposed in Amendment 13, thus is a less practicable alternative.	Access into these areas is not expected to have significant impacts on EFH because previous access was granted into these areas and they have not been identified as important habitat areas that should be closed as habitat closed areas.
Alt 2 - Access area boundaries consistent with the habitat closures described in A13	NPA	Section 4.2.2.2	Cumulative effects of this access alternative may be more negative than the other access alternatives because this alternative would open more area with few effects on the scallop resource or fishery. More EFH area would be impacted because fishing effort could be more spread out.	Overall, access into these areas is not expected to have significant impacts on EFH because these areas are not critical EFH areas with diverse substrate. Furthermore, these access areas are outside of the habitat closed areas proposed in Amendment 13.
Alt 3 – FW 13 access area boundaries consistent with habitat closures in both FMPs	NPA	Section 4.2.2.3	Access into these areas is not expected to have cumulative effects on EFH because previous access was granted into these areas and they are completely outside of the habitat closed areas proposed in Amendment 13.	Not expected to be significant because the access areas were effected by scallop fishing in 1999 and 2000.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Alt 4 - Area access are boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NLSA and the northern part of CA I	PA	Section 4.1.1	Access into these areas is not expected to have cumulative effects on EFH because previous access was granted into the majority of these areas and they are completely outside of the habitat closed areas proposed in Amendment 13. About 568 nm ² of this access alternative have not been open for access since 1994.	Not expected to be significant because the lower bottom contact time in outside areas as a result of this action is expected to outweigh the impacts to those additional areas opening for access.
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Section 4.1.2 & 4.2.3	(Sections 6.1 and 6.2.3)	
Alt 1 - Habitat closed areas consistent with the Framework Adjustment 13 Scallop Closed Area access program (Status quo; Approval of Amendment 10 only)	NPA	Section 4.2.3.1	Neutral cumulative effects on EFH. These areas have been closed since 1994 to all scallop fishing.	Not expected to have significant impacts on EFH, but this alternative is not feasible with proposed Access Alternative 4, because the southern portion of the access area in Closed Area I overlaps with this habitat closed area alternative.
Alt 2 - Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	Similar EFH benefits as Alternative 1, but this alternative has been deemed more effective because it contains about the same EFH value, but is 1/3 the size of Alternative 1.	Not expected to have significant impacts on EFH. This alternative would improve the overall practicability of EFH closed areas in the region, by making EFH closed areas consistent among FMPs.
Alt 3 - Habitat closed areas consistent with Amendment 10 to the Sea Scallop FMP and with Amendment 13 to the Northeast Multispecies FMP	NPA	Section 4.2.3.3	This alternative would close the most area for habitat conservation, potentially concentrating more scallop effort in outside areas, which could actually increase bottom contact time if scallops are less abundant in outside areas.	Not expected to have significant impacts on EFH, but the habitat benefits of closing more area may not outweigh the costs. This alternative has a lower EFH value per square mile than the other two habitat closed area alternatives.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Gear Restrictions			(Sections 6.1 and 6.2.4)	
Limited access vessels must use dredges only	PA	Section 4.1.3	Potentially negative for EFH if this measure changes fishing behavior of trawl vessels to fish exclusively with dredges.	No significant impacts on EFH, since both gears impact vulnerable EFH.
Groundfish Catch Limits		Section 4.1.4 & 4.2.5	(Sections 6.1 and 6.2.5)	
Hard TAC for yellowtail flounder bycatch; areas close to scallop fishing without transfer of unused DAS to open areas	NPA	Section 4.2.5.1	Neutral cumulative effects on EFH because if access areas close due to the groundfish bycatch TAC being reached, unused DAS cannot be transferred into open areas.	Not expected to have significant impacts on EFH.
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to 20 days at sea	PA	Section 4.1.4	Limit on number of trips that a vessel may transfer from closed controlled access areas to open areas prevents fishing all unused DAS in open areas, which limits impacts on EFH in open areas to those analyzed in Amendment 10.	Any displaced effort to open areas as the result of the hard TAC for yellowtail flounder being reached would be within the range of effort allocated by the FMP and would not result in a significant cumulative effect on EFH inside or outside the access areas.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer all unused controlled access DAS allocations in open areas	NPA	Section 4.2.5.2.4	This alternative could increase effort in outside areas above levels analyzed in the Amendment 10 FSEIS, and may have negative cumulative effects on EFH.	Since effort and bottom contact time could increase beyond levels analyzed in Amendment 10, the alternative was not approved, but has no significant cumulative effect on EFH.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Could reduce scallop fishing effort in outside areas if bycatch TAC increased. If more vessels use DAS in the access areas than outside, bottom contact time in outside areas will decline.	No significant impact on EFH because the access areas have not been identified as important habitat areas.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	If set-aside is used for habitat related research could have cumulative benefits on EFH.	No significant impact on EFH.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	This alternative could keep the access areas open longer by keeping yellowtail flounder and groundfish bycatch low, therefore ensuring that the expected effect of minimizing impacts on EFH is achieved.	Not expected to have significant impacts on EFH.
Finfish possession limits			(Sections 6.1 and 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	No cumulative effect on EFH unless this measure modifies fishing behavior to target other species other than scallops. However, reducing discards of normal bycatch could have some unquantified benefits to sensitive habitats.	No significant impact on EFH.
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	No cumulative effects on EFH.	No significant impact on EFH.
Access Seasons		Section 4.1.6 & 4.2.7	(Sections 6.1 and 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	No cumulative effects on EFH because recovery times for most benthic communities following disturbance by scallop dredges have been estimated to be months to years in sandy habitats and several years in gravel habitats.	No significant impact on EFH.
At-Sea Observers, TAC Set-Aside, And Fishery Monitoring		Section 4.1.7	(Sections 6.1 and 6.2.8)	
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	No cumulative effects on EFH. Greater efforts to collect invertebrate catch data would assist assessing EFH impacts	No significant impact on EFH.
Enforcement Provisions		Section 4.1.8	(Sections 6.1 and 6.2.9)	
Trip declaration and notification	PA	Section 4.1.8.1	Indirect positive impacts through improved management.	No significant cumulative effects on EFH are expected.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	Same as above.
Reporting Requirements		Section 4.1.9	(Sections 6.1 and 6.2.10)	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	Same as above.
Vessel trip reports	PA	Section 4.1.9.2	Some of the additional reporting requirements recommended would have cumulative benefits to EFH, such as a subjective description of the habitat being dredged and the depth of tows. Information on a tow-by-tow-basis may have indirect benefits to EFH, as it could assist in better habitat assessment information.	No significant impact on EFH.
Mechanical rotation alternatives		Section 4.1.10	(Sections 6.1 and 6.2.11)	
Amendment 10 rotational access to portions of CA I, CA II, and the NLSA beginning with CA I and the NLSA in 2004, and CA II in 2005-2007	NPA	Section 4.2.11.1	This would prevent fishing in some access areas for three years, which would allow those areas to recover significantly from habitat impacts.	No significant impact on EFH because these areas have been access before and have not been identified as important areas for habitat conservation.
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	This action proposes access in two access areas at a time, while one area is closed for one year only. That is less recovery time than under the status quo option (up to three years).	No significant impact on EFH because these areas have been access before and have not been identified as important areas for habitat conservation.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	(Sections 6.1 and 6.2.12)	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Total trips, DAS use, and bottom contact time are expected to be unaffected by this allocation adjustment. Overall cumulative impacts on EFH are likely to be insignificant.	No significant impact on EFH.
Access for general category vessels			(Sections 6.1 and 6.2.13)	
Access with enhanced reporting and a 2% TAC set-aside	PA	Section 4.1.11	No discernable cumulative effects on EFH.	No significant impacts on EFH.

6.3.7.5 Protected species

6.3.7.5.1 Direct and Indirect Impacts of the Proposed Action

Section 6.1.3 describes and summarizes the expected impacts on protected species, focusing on the preferred alternatives.

Because the access areas are not in high use areas for sea turtles and the proposed action would reduce open area DAS allocations that are used to fish in the Mid-Atlantic region where turtles are more prevalent, the proposed action is expected to cause a reduction in sea turtle interactions, relative to the No Action alternative. The partial transfer of unused controlled access DAS allocations into open fishing areas (if the access areas close because yellowtail flounder catches reach the TACs) will not exceed the expected impacts on protected species that were calculated for Amendment 10 management measures. Other management adjustments in the proposed action will have an insignificant impact on protected species.

6.3.7.5.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

Before 2001, interactions between scallop dredges and sea turtles were not recognized as a problem mostly due to low sea sampling of scallop fishing trips in the Mid-Atlantic region. Although the exact reason for the observed interactions are not known very well, these interactions probably occurred before 1999 and may have become more prevalent since 1993. Around this time, 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 related to fishing effort, sea turtles may have benefited from reductions of fishing effort allocations in Amendments 4 and 7. During this time, DAS use declined from 40,490 DAS in 1993 to 23,074 DAS in 1999, before increasing to 30,082 DAS, a preliminary estimate for 2003. These amendments and intervening framework adjustments also made other management changes, including new gear restrictions, but the effect of these changes on sea turtle interactions is unknown.

The extent of interactions between fishing with scallop dredges and sea turtles was recognized through enhanced sea sampling frequency, funded by the scallop TAC set-aside for the Hudson Canyon and VA/NC Areas under Framework Adjustments 14 and 15. Subsequently, new research to identify gear and fishing behavior changes that could reduce interactions and/or improve the survivability of sea turtles from these interactions with scallop dredges has been initiated.

6.3.7.5.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

The main goal of Amendment 10 to the Scallop FMP, scheduled to be implemented in spring 2004, is to focus scallop fishing effort in areas where biomass is greatest. Therefore, although the overfishing definition may result in an increase in landings over levels discussed in the extant biological opinion, the actual fishing time is likely to be reduced, as the overall catch per tow is expected to increase.

However, assessing the potential impacts of the various area management alternatives on sea turtles is impossible to predict at this time. Scallop management areas will be monitored through annual scallop surveys for scallop biomass and growth rates, so that when biomass in a closed area gets high and the growth rate drops off (i.e. the scallop resources are at maximum levels in the area) it would be opened. Conversely, closings will occur when the reverse situation is occurring (low biomass and high growth rate

indicating a depleted scallop resource in the area). Therefore, until the annual scallop surveys are conducted, we do not know which areas may be candidates for closing or reopening.

Certain general statements may be made regarding areas encompassing several scallop management units. For example, sea turtles do not frequent the Georges Bank area where several closed areas are currently in effect under the Multispecies FMP. Scallop resources in those closed areas are known to be at maximum levels. Opening those areas would have no effect on sea turtles, and could shift effort out of the high use sea turtle areas in the mid-Atlantic. (Note - This is not a certainty, as vessels from mid-Atlantic ports may not want to make the longer trips). To further complicate matters, reopening these areas requires new framework actions under both the Multispecies (Framework 39) and Scallop (Framework 16) FMPs. Therefore, the action is far from completed.

It also must be realized that a reverse shifting of effort from a low sea turtle area such as Georges Bank, to a high use area like the mid-Atlantic will likely occur at some time in the future as the Georges Bank scallop resources are depleted and the mid-Atlantic areas are recovered. Therefore, the impact assessment for protected species is likely to shift back and forth over the years under the management scheme being implemented under Amendment 10. The turtle takes seen now are likely to shift down as the industry moves to the east and north, but are also likely to shift back up at some point in the future as scallop resource levels change.

Therefore, the specific area management issues are going to have to be addressed as the openings and closings are proposed. Since they will be conducted under Framework actions, they will undergo individual ESA scrutiny where the latest scallop survey data will be available to give the best resource management picture at that time.

The most recent Biological Opinion issued by the NMFS for the sea scallop fishery summarized the overall impacts to threatened and endangered species. It concluded that the fishing operations being carried out under the Scallop FMP as defined through Framework 15, were not likely to adversely affect endangered large whales in the action area (right, humpback, fin, blue, sei, and sperm whales), hawksbill sea turtle, Atlantic salmon, shortnose sturgeon, or the two right whale critical habitat areas found in the Northeast Region. The Opinion did conclude that the scallop fishing activities may adversely affect the remaining sea turtle species (loggerhead, leatherback, Kemp's ridley, and green), but would not likely jeopardize the continued existence of those species. The document went on to establish an incidental take statement for those species with required measures that must be implemented in order to allow the takes to be legal under the ESA. Further, the opinion provided several reasonable and prudent conservation measures to further protect sea turtles. Re-initiation of the Section 7 consultation will occur if the incidental take species in the ITS is exceeded or new information becomes available to change the conclusion of the Biological Opinion.

Amendment 13 to the Multispecies FMP, underwent an informal consultation under Section 7 of the Endangered Species Act, which concluded that there will not likely be any adverse impacts on endangered or threatened species (December 18, 2003). Further, the Reasonable and Prudent Alternative in place is expected to continue to avoid the likelihood of jeopardizing right whales. The restrictive measures implemented under the ALWTRP will continue to provide specific protection to the right whale as well as other large whale species.

Other sources of human-induced mortality and/or harassment of turtles in the action area 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 (R. Boettcher, pers. comm.).

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 is 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).

The proposed action in this framework adjustment does not appear to have any adverse cumulative effects that would alter the prognosis for impacts of fishing under Amendment 10 and Amendment 13 management regulations on protected species. In fact, there is a potential for reducing impacts on sea turtles through decreases in open area DAS use in the scallop fishery, increasing the effectiveness of the DAS controls to limit impacts on sea turtles.

6.3.7.5.4 Summary of cumulative effects for protected species

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1 and 6.2.1) Cumulative effects of the No Action alternative are the same as the assessment of Amendment 10 cumulative effects described above.	Not expected to be significant because interactions with sea turtles will be monitored by set-aside funded observers and new technology developed by at-sea trials can be implemented through the framework adjustment process under Amendment 10 regulations
Area access alternatives		Sections 4.1.1 & 4.2.2	(Sections 6.1 and 6.2.2)	
Area access are boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NLSA and the northern part of CA I	PA	Section 4.1.1	The access boundaries have a cumulative effect on interactions with sea turtles, because they affect how much effort can be allowed in the access areas and therefore dictate the amount of effort to be allocated for fishing in open areas	Not expected to be significant because the sea turtle interactions would be no greater than that calculated to occur with Amendment 10 allocations without access.
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Sections 4.1.2 & 4.2.3	(Sections 6.1 and 6.2.3)	
Habitat closed areas consistent with Amendment 10 to the Sea Scallop FMP and with Amendment 13 to the Northeast Multispecies FMP	NPA	Section 4.2.3.3	EFH closed areas prevent access to some parts of the scallop resource, increasing the DAS allocations in open fishing areas, including DAS used in the Mid-Atlantic region where sea turtles are more prevalent.	Unlike some of the non-preferred alternatives, the changes in the boundaries of the EFH closed areas is not expected to decrease the amount of the scallop resource that is available for fishing. This will prevent the open area DAS allocations from increasing beyond those that were allocated in Amendment 10.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Gear Restrictions		Section 4.1.3	(Sections 6.1 and 6.2.4)	
Limited access vessels must use dredges only	PA		Could reduce the likelihood that vessels using scallop trawls will fish in the Georges Bank access area program. As a result, vessels using trawls may trade Georges Bank area DAS for Hudson Canyon Area DAS.	These cumulative effect is more likely than not to cause a reduction in scallop dredge fishing in the Mid-Atlantic region, potentially reducing interactions with sea turtles. The reduction will not be significant.
Groundfish Catch Limits		Sections 4.1.4 & 4.2.5	(Sections 6.1 and 6.2.5)	
Hard TAC for yellowtail flounder bycatch; areas close to scallop fishing without transfer of unused DAS to open areas	NPA	Section 4.2.5.1	This alternative would prevent open area DAS use with access from increasing, if the access areas close because of yellowtail flounder catches.	Not expected to be significant because reducing open area DAS is expected to have a beneficial effect for sea turtles.
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to the difference in open area DAS with and without access to achieve the annual fishing mortality target for the resource (20 DAS in 2004, for example)	PA	Section 4.1.4	Open area DAS use would be no higher than expected under Amendment 10 regulations.	Not expected to be significant because the sea turtle interactions would be no greater than that calculated to occur with Amendment 10 allocations without access.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by fleet-wide DAS use to take remaining trips in open areas	NPA	Section 4.2.5.2.2	Same as above, but all vessels would be able to transfer the same proportion of unused DAS.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer unused controlled access DAS allocations, prorated by expected landings per DAS to take remaining trips in open areas	NPA	Section 4.2.5.2.3	Same as above.	Same as above.
Hard TAC for yellowtail flounder with a provision to allow vessels to transfer all unused controlled access DAS allocations in open areas	NPA	Section 4.2.5.2.4	The transferred DAS could allow Mid-Atlantic region scallop fishing to exceed amounts expected under Amendment 10 regulations.	The amounts are unlikely to exceed the open area allocations after 2004, therefore the cumulative effects are not expected to be significant.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	This alternative would reduce the probability of areas closing, before scallop vessels use their controlled access DAS to fish in Georges Bank access areas.	Not expected to be significant because the sea turtle interactions would be no greater than that calculated to occur with Amendment 10 allocations without access.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	Unlikely to have a cumulative effect, because the scallop research would probably occur in low-use areas.	Not expected to be significant because sea turtles are not common in these areas, where the research and/or compensation trips would occur.
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Actions vessels might take to avoid catching yellowtail flounder and other groundfish are unlikely to effect how dredges catch sea turtles.	No cumulative effect expected.
Finfish possession limits		Sections 4.1.5 & 4.2.6	(Sections 6.1 and 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	No cumulative effect expected.	No cumulative effect expected, because the alternative is unlikely to alter fishing behavior or methods.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	Same as above.	Same as above.
Access Seasons		Sections 4.1.6 & 4.2.7	(Sections 6.1 and 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	Increases the likelihood that the access areas would remain open longer than October, after which sea turtles are less prevalent in open fishing areas.	Not expected to be significant because effort transfers from the access areas to open areas would be more likely to occur after sea turtles have left the Mid-Atlantic region.
Year around access	NPA	Section 4.2.7.3	Potential higher groundfish bycatch in February to June, coupled with timing, could cause the access areas to close when sea turtles are present in the Mid-Atlantic. Transfers of effort could cause sea turtle interactions to go up.	Transfers of unused controlled access DAS are limited to the amount specified for open areas in Amendment 10, therefore the increases in sea turtle interactions are not expected to be significant.
At-Sea Observers, TAC Set-Aside, And Fishery Monitoring		Sections 4.1.7	(Sections 6.1 and 6.2.8)	
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	Allows more sea sampling than would otherwise be available to document bycatch and monitor interactions with protected species	Not expected to be significant because the sampled trips would be in low-use sea turtle areas.
Enforcement Provisions		Sections 4.1.8	(Sections 6.1 and 6.2.9)	
Trip declaration and notification	PA	Section 4.1.8.1	No cumulative effects on protected species impacts are expected.	None.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	None.
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	None.
Reporting Requirements		Sections 4.1.9	(Sections 6.1 and 6.2.10)	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	None.
Vessel trip reports	PA	Section 4.1.9.2	Same as above.	None.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Mechanical rotation alternatives		Section 4.1.10	(Sections 6.1 and 6.2.11)	
Amendment 10 rotational access to portions of CA I, CA II, and the NLSA beginning with CA I and the NLSA in 2004, and CA II in 2005-2007	NPA	Section 4.2.11.1	Fishing years when CAI and the NLSA would be open to fishing would have a greater probability of closing from yellowtail flounder catches, because of the higher fishing mortality targets according to this strategy.	Transfers of unused controlled access DAS are limited to the amount specified for open areas in Amendment 10, therefore the increases in sea turtle interactions are not expected to be significant.
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	Evens out the controlled access effort allocations across years and reduces the likelihood that the yellowtail flounder catches will exceed the TACs.	A lower likelihood of access area closure and unused DAS transfers would reduce sea turtle interactions, causing the cumulative effect to be insignificant.
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	(Sections 6.1 and 6.2.12)	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Adjusted allocation system will not change the total number of trips in the controlled access or open scallop fishing areas.	No cumulative effect is expected, because the total effort by area is not expected to change.
Access for general category vessels		Section 4.1.11		
Access with enhanced reporting and a 2% TAC set-aside	PA		If the access program encourages more investment in the open access fishery, it could cause the amount of scallop fishing in open areas to go up.	Not expected to be significant because, few vessels in the Mid-Atlantic with general category scallop permits are likely to invest more in scallop fishing because of greater access in the Georges Bank region.

6.3.7.6 Human safety at sea

6.3.7.6.1 Direct and Indirect Impacts of the Proposed Action

Section 6.1.5.1 describes and summarizes the expected effects on safety, focusing on the preferred alternatives. These effects arise primarily from the automatic DAS charge which may cause vessels to remain at sea during adverse weather, from the access season (June 15 to January 31), and from gear stowage requirements for vessels transiting the access areas when not on a controlled access trip. As explained in Section 6.1.5.1, the new broken trip adjustment procedure is expected to substantially reduce the business risk of ending a trip early. The access season and the gear stowage requirements are not very different than the conditions that apply during open area fishing trips. There is ample time for vessels to take three allocated trips of 12 or less days during the 7 ½ month period. Vessels transiting the access areas while not on a controlled access trip would have to stow gear anyway, because the areas would otherwise be closed to fishing, therefore requiring gear stowage. More detail about these and other related issues is presented in Section 6.1.5.1.

6.3.7.6.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

Effects of past and present actions on safety in the sea scallop fishery were analyzed and discussed in the Amendment 10 FSEIS. These actions include direct regulation of the industry by the Sea Scallop FMP and indirect effects by regulations in the Multispecies and Monkfish FMPs that regulate other catches while scallop fishing. In addition, the 2000 SAFE Report included a detailed and comprehensive analysis of USCG casualty statistics for the scallop fishery, showing a downward trend in casualties in the fishery.

The sea scallop fishery is regulated by DAS allocations, which have declined over the past decade, while catch per DAS has risen. As a result, vessels are not at sea for considerable periods and have become more profitable. The industry has invested capital in better maintenance and even replacing old vessels, thereby improving safety. Lately, the daily catches have risen and have begun exceeding the vessel's capacity to shuck scallops under some conditions. Thus in open fishing areas, there are times when the crew maintains long watches shucking scallops and some fear that this may be compromising safety. On the other hand, previous access programs have allowed the vessels to fish at a more deliberate pace, despite the very high catch rates in re-opened areas. Instead of fishing at a breakneck speed to catch and process scallops in as few DAS as possible, vessels have been able to take longer to catch their scallop possession limit allowances when fishing in controlled access areas. VMS equipment allows better communications and vessel location information, having a potential beneficial effect on safety.

Multispecies and Monkfish FMPs set possession limits for regulated finfish, requiring scallop vessels to discard catches that exceed the allowance. There is no evidence that these requirements impact safety.

Other non-fishery actions that have an impact on safety are better navigation systems and communications about weather and other events that may affect safety. In addition, the 1988 Commercial Vessel Safety Act and related regulations have had a positive impact on safety in the scallop fishery, as explained in the 2000 SAFE Report.

6.3.7.6.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

Future regulations under Amendment 10 to the Sea Scallop FMP are expected to have a positive impact on safety, by maintaining high catch rates at the target biomass and industry profitability. Rotation area management and future DAS allocations are expected to have a positive effect in this regard.

Amendment 13 (and the Scallop FMP with this framework adjustment) includes new EFH closed areas, which partially overlap the existing groundfish closed areas. Since fishing gear must be stored when transiting closed areas, these areas may have a potentially adverse impact on safety. On the other hand, it is not anticipated that vessels will have to stow gear more frequently due to the EFH closed areas, because most would have already stowed the gear to transit the groundfish mortality closed areas that overlap the EFH boundaries. Some vessels steaming from the Great South Channel may have to stow the gear when transiting the Nantucket Lightship Area EFH closed area, but most vessels fishing in this location steam through the Nantucket Sound to arrive at New Bedford, MA; a primary scallop fishing port.

Changes to navigational hazards in and around Nantucket Sound may therefore have an impact on safety in the scallop fishery. The nature of the impacts however is hard to determine at this time, but will depend on the location of the hazards (such as windfarms) and associated aids to navigation to avoid them.

6.3.7.6.4 Summary of cumulative effects for human safety at sea

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	Could have an adverse impact on safety through declining catch rates and profits in open fishing areas. Increases the overall amount of time that a vessel would fish to achieve the target fishing mortality rate.	Not expected to be significant because catch rates in the open areas is not expected to decline quickly, due to favorable recruitment in recent years. Management adjustments to achieve optimum yield and rotation area management could reduce this potential impact.
Area access alternatives		Sections 4.1.1 & 4.2.2	(Sections 6.1 and 6.2.2)	
Area access are boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NLSA and the northern part of CA I	PA	Section 4.1.1	Access areas may increase the amount of potentially dangerous gear stowage required by regulation when transiting areas while not on a controlled access trip.	Access boundaries are not expected to have an effect on safety, because they are within the existing groundfish mortality closed areas.
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Sections 4.1.2 & 4.2.3	(Sections 6.1 and 6.2.3)	
Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	Expansion of the EFH closed areas outside the boundaries of the existing groundfish closed areas could increase the amount of scallop fishing trips where gear stowage might be required. The EFH areas are also not expected to change navigational patterns by scallop vessels, potentially increasing navigational dangers.	Not expected to be significant because few trips pass through the proposed area boundaries to get to and from the fishing areas from primary ports.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Gear Restrictions		Section 4.1.3	(Sections 6.1 and 6.2.4)	
Limited access vessels must use dredges only	PA		Scallop vessels that use trawls may need to use heavier dredges to utilize their annual DAS allocations.	Not expected to be significant because many vessels with scallop trawl permits already use scallop dredges under certain conditions and those that do not can exchange trips to fish in areas where scallop trawls are allowed.
Groundfish Catch Limits		Sections 4.1.4 & 4.2.5	(Sections 6.1 and 6.2.5)	
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to the difference in open area DAS with and without access to achieve the annual fishing mortality target for the resource (20 DAS in 2004, for example)	PA	Section 4.1.4	Could reduce impacts on safety allowing vessels to take unused trips in open areas if the access program closes due to yellowtail flounder catches. This measure could avoid a derby-style fishery that could have negative impacts on safety.	Not expected to be significant because the cumulative effect on safety is similar to the status quo without access.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Alternative could increase season length or reduce threat of early closure	Same as above.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	No effect on safety anticipated.	None.
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Voluntary actions could include moving to fish in areas with less bycatch and/or momentarily stopping the haul back to allow finfish to escape before retrieving the gear on the vessel.	Not expected to be significant because these actions are unlikely to have an effect on safety.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Finfish possession limits		Sections 4.1.5 & 4.2.6	(Sections 6.1 and 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	No effect anticipated.	Not expected to be significant because the amount of (or reduction in) discarding is not known to have an effect on safety.
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	No effect anticipated.	Same as above.
Access Seasons		Sections 4.1.6 & 4.2.7	(Sections 6.1 and 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	Could increase fishing activity during the late summer and fall, when ocean storms are more prevalent.	Not expected to be significant because scallop fishing is a year around activity. There is plenty of time for vessels to choose when to take controlled access trips and avoid inclement weather.
At-Sea Observers, TAC Set-Aside, and Fishery Monitoring		Sections 4.1.7	(Sections 6.1 and 6.2.8)	
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	No cumulative effects on safety are expected.	None.
Enforcement Provisions		Sections 4.1.8	(Sections 6.1 and 6.2.9)	
Trip declaration and notification	PA	Section 4.1.8.1	Same as above.	None.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	None.
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	None.
Reporting Requirements		Sections 4.1.9	(Sections 6.1 and 6.2.10)	
Vessel monitoring systems (VMS)	PA	Section 4.1.9.1	VMS equipment may allow quicker vessel location during an emergency.	Not expected to be significant because other means of communication (VHF, EPIRB) during an emergency are available.
Vessel trip reports	PA	Section 4.1.9.2	No cumulative effects on safety are expected.	None.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects (Reference to analysis of direct and indirect impacts)	Significance
Mechanical rotation alternatives		Section 4.1.10	(Sections 6.1 and 6.2.11)	
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	Could have a positive impact on safety by allowing the fishery to achieve optimum yield with a lower threat of closure due to yellowtail flounder catches.	Not expected to be significant because the alternative only affects a potential response by fishermen to a less probable outcome (fishery closure).
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	(Sections 6.1 and 6.2.12)	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	No cumulative effect on safety is anticipated.	None, because the total number of trips and DAS fished is expected to remain the same.
Access for general category vessels		Section 4.1.11	(Sections 6.1 and 6.2.13)	
Access with enhanced reporting and a 2% TAC set-aside	PA		Could encourage small vessels with general category vessels to fish further from shore in re-opened scallop areas.	Not expected to be significant because, vessels that are likely to fish in re-opened scallop fishing areas are sea worthy and often fish for scallops or other species in nearby areas.

6.3.7.7 Fishing-dependent communities

6.3.7.7.1 Direct and Indirect Impacts of the Proposed Action

The direct and indirect impacts to the fishing communities will be positive if the impacts on employment and on net revenues and incomes are positive. The aggregate economic impacts of the proposed rotation schedule with access to the Georges Bank groundfish areas on scallop fishery, vessel revenues, costs, gross profits, crew shares and employment are examined in Section 6.2.11.4 and Section 6.3.7.1.1. The combined impacts of the proposed access to the Georges Bank groundfish areas will be positive on fishing communities. Even though the proposed rotation strategy with access will generate marginally lower revenues from scallop fishing compared to no access during the 2004-2007 period, it will also lower fishing costs and increase producer benefits, including gross profits and crew incomes.

Although access may reduce the total crew DAS worked in the scallop fishery, it is uncertain, to what extent this reduction in total DAS worked by crew would translate into a reduction, if at all, in the total number of crew employed by the scallop fishery. On the income side, the impacts from access will be positive. Crew income is estimated to increase both during the 2004-2007 period, and over the long-term because of lower trip expenses with access.

The proposed access, rotational measures, area-specific DAS and trip allocations could have differential effects on fishing families and communities, on scallop vessels, and on processors and ports. The proximity of these entities to open and controlled access areas, as well as to the areas closed for fishing because of rotation and/or habitat protection, may result in differential impacts from proposed area rotation. These impacts may also vary according to the mobility of the vessels in accessing alternative fishing areas. Section 8.7.2.3 of Amendment 10 provides an empirical analysis of the vessels that could be impacted negatively from area-specific DAS allocations for the controlled access areas and indicated how the one-to-one exchange provision for the access allocations could mitigate some of these impacts. However, the proposed restrictions on the DAS exchanges for controlled access trips, specifically limits on these exchanges amongst vessels in different permit categories, will reduce the flexibility and opportunities for exchange for some vessels, especially for those in the part-time and occasional category as examined in Section 6.2.12.4.

A discussion of the distributional impacts from area rotation, from alternative effort allocation and habitat closures, and from other measures included in Framework 16 is also provided in relevant social impact subsections Section 6.2 and in Section 8.8 (Social Impact Assessment) in the Amendment 10 FSEIS. The direct and indirect impacts of the individual measures considered by this Framework, including mechanical rotation alternatives, area-access options, habitat closures, gear restrictions, access seasons, groundfish catch and possession limits, fishery monitoring and enforcement provisions, trip allocations for part-time and occasional vessels, general category and other proposed measures, are analyzed in relevant subsections of Section 6.2.

6.3.7.7.2 Effects of Past and Present Actions, Including Other Federal and non-Federal Actions

The effects of the past and present actions on the fishing communities were summarized in Table 157 of Amendment 10. The cumulative impacts of these actions on the fishing communities usually depend on the impacts on fishing revenues, incomes and employment. These economic impacts are summarized in Section 6.3.7.1.1, and thus will not be repeated here. Overall, the long-term cumulative effects of the past actions, including Amendment 4 and Amendment 7 to the Sea Scallop FMP, and groundfish area closures since 1994 were positive for the fishing communities because of the positive

impacts on revenues, profits and crew shares. Similarly, access programs implemented through Frameworks 11, 13, 14 and 15 had significant positive impacts on scallop landings, revenues, profits and crew incomes. Therefore, past and present actions had positive cumulative impacts on vessel owners, crew and their families in the scallop fishery by increasing their profits, incomes and standard of living.

6.3.7.7.3 Effects of Reasonably Foreseeable Future Actions (RFFAs)

The effects of the reasonably foreseeable future actions on the fishing communities were summarized in Table 157 of Amendment 10. The impacts of these actions for the scallop fleet and infrastructure were discussed in Section 6.3.7.1.1. The impacts on the fishing communities will be similar to those summarized for the scallop fleet and infrastructure, and will not be repeated here. Closing of areas with small scallops and allowing access to high scallop abundance areas of the Georges Bank and the Mid-Atlantic with potential Framework action in the future is expected to increase the long-term cumulative benefits for the fishing communities by redistributing scallop fishing to more productive areas and by increasing overall yield and economic benefits from the scallop resource. Fishing in areas with high catch rates (LPUE) is expected to reduce fishing costs and increase profits and crew incomes over the long-term. The short-term impacts of such actions could not be predicted with certainty, however. Future Framework actions could lower DAS allocations and area specific possession limits, and revise the boundaries of controlled access areas as well as the reopening and closing schedules for rotation areas depending on the changes in scallop recruitment and stock biomass. These adjustments could lower revenues, profits, crew incomes and employment in the short-term, reducing positive cumulative impacts on the fishing communities.

In addition to the future scallop frameworks, Amendment 13 to the multispecies fishery and future regulations for this fishery could have impacts on the scallop fishery. Rebuilding of the groundfish stocks through these actions could have positive impacts on the fishing communities if they reduce the need for extensive closures in the Georges Bank groundfish areas. On the negative side, opening of Southern New England for scallop fishing by vessels with general category permits through Amendment 13 may increase fishing effort and mortality on scallops. Such a negative impact could cause a reduction in DAS allocations or area-specific possession limits for limited access vessels, resulting in a negative impact on fishing communities, especially on those that derive their incomes and employment from full-time scallop fishing. Because the general category vessel landings do not constitute a significant proportion of the overall scallop landings, such changes are not expected to have significant cumulative impacts, however.

There are no other foreseeable future actions that could have significant cumulative effects on the scallop fishery and fleet as explained in Section 6.3.7.1.1. Since the impacts on the fishing communities generally occur through the impacts on revenues, incomes and employment in the scallop fishery, no significant cumulative impacts are expected from other actions.

6.3.7.7.4 Summary of Cumulative Effects for fishing dependent communities

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
No access and scallop fishing in Closed Area I, Closed Area II, and the Nantucket Lightship Area	No Action	Section 4.2.1	(Sections 6.1.4 and 6.2.1) Reduces positive cumulative effects because it reduces net revenues and crew incomes compared with access due to higher costs from fishing in the open areas. May increase employment, however, because of higher DAS allocations.	Not expected to be significant. The present conditions of the scallop resource and the level of DAS allocations in the open areas are expected to generate revenue and income comparable to the levels with access.
Area access alternatives		Section 4.1.1 & 4.2.2	(Sections 6.1.4 and 6.2.2)	
Alt 4 - Area access boundaries consistent with the habitat closures described in A13, with continued groundfish and scallop mortality closures in the western part of the NSLA and the northern part of CA I	PA	Section 4.1.1	Increases positive cumulative effects on the communities by providing greater access to the scallop resource in more productive areas, thereby by increasing gross profits and crew incomes. It could reduce employment in the scallop fishery due to lower DAS allocations, but may also lead to increase in employment in sectors with backward and forward linkages to the scallop fishery. Vessels may not need to re-locate to fish in Georges Bank groundfish areas because they will be able to exchange trips with other vessels, which reduces any negative distributional impacts.	Not expected to be significant because the level of scallop revenue will be close to what is expected under other access alternatives and also under no access scenario.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH		Section 4.1.2 & 4.2.3	(Sections 6.1.4 and 6.2.3)	
Habitat closed areas consistent with Alternative 10b, closures approved by the Council in Amendment 13 to the Northeast Multispecies FMP	PA	Section 4.1.2	Could negatively impact those fishermen who tend to fish in habitat closed areas, and would increase safety risks, increased time away from home and possible income loss because of displacement of effort to other areas. Overall, increases positive cumulative effects for the fishing communities, however, by allowing greater access for fishing in relatively more productive areas, reducing fishing costs and increasing gross profits and crew incomes in the scallop fleet.	Because changes in scallop landings and revenues are expected to be small with the proposed closure compared to the closures that are already in place, cumulative impacts on the fishing communities are not expected to be significant. It does not appear that the additional closures proposed for the Nantucket Lightship area or Cashes Ledge will additionally impact the industry negatively given that little fishing has recently occurred there (see Amendment 10 SIA).
Gear Restrictions			(Section 6.2.4)	
Limited access vessels must use dredges only	PA	Section 4.1.3	Negative impacts on the scallop trawl sector. Given that the numbers of these vessels are small and they are mostly located in Mid-Atlantic, the overall negative impacts on the fishing communities may not be significant. Because vessels could exchange allocations for Mid-Atlantic access trips, negative impacts could be reduced. Indirect positive cumulative impacts on the fishing communities as a whole, however, by minimizing the risks for high finfish bycatch and therefore, the risk of income loss from premature closure of Georges Bank groundfish areas.	No significant cumulative impacts on the fishing communities are expected because of the mitigating factors, i.e., small number of scallop trawls with primary locations in Mid-Atlantic, and opportunity to exchange groundfish access area trips with other vessels for Hudson Canyon area trips where it is allowed to fish with trawls.
Groundfish Catch Limits		Section 4.1.4 & 4.2.5	(Section 6.2.5)	

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Hard TAC for yellowtail flounder with a provision to allow vessels to take remaining trips in open areas up to 20 days at sea	PA	Section 4.1.4	Indirect positive impacts by keeping bycatch from exceeding finfish quotas, and reducing the risks of income loss due to early closures of GBG. Negative impacts because a hard TAC encourages derby-style fishing resulting in safety problems, difficult working conditions, as well as lost revenue from relatively heavy landings in short periods of time. The provision for transfer of DAS to open areas in case of area closings will minimize these negative impacts on fishing communities, however.	Early closure of the Georges Bank groundfish areas will not result in a significant reduction in landings and revenues from the scallop fishery due to the DAS transfer provision. This provision will also reduce derby-style fishing. Therefore, no significant cumulative effects on the fishing communities are expected.
Provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year	PA	Section 4.1.4	Will increase positive impacts on revenues, and therefore, on fishing communities than otherwise possible by extending the season for scallop fishing under the appropriate circumstances.	No significant changes in scallop revenues and fishing costs are anticipated from this measure. Therefore, cumulative impacts are not expected to be significant.
Two percent set-aside of the yellowtail TAC to allow and fund research	PA	Section 4.1.4.2	Possible positive impacts on the fishing communities by increasing local employment.	No significant changes in scallop landings; revenues and fishing costs are anticipated from this measure. Therefore, cumulative impacts are not expected to be significant
Procedures to achieve voluntary actions to minimize bycatch	PA	Section 4.1.4.3	Indirect positive impacts on the fishing communities by helping to reduce bycatch and the income loss due to early closure of Georges Bank groundfish areas.	Cumulative impacts are not expected to be significant because no significant changes in scallop landings; revenues and fishing costs are anticipated from this measure.
Finfish possession limits			(Section 6.2.6)	
Groundfish possession limit equal to 1000 lbs./trip, with a seasonal sub-limit for yellowtail flounder	PA	Section 4.1.5.1	Indirect positive impacts by reducing regulatory discards, but no effects on scallop landings, revenues, fishing costs.	No significant cumulative impacts are anticipated on the fishing communities because the overall scallop landings, revenues and fishing costs will not change in any significant way.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Additional cod possession limit for personal use equal to 100 lbs./trip for personal use	PA	Section 4.1.5.2	Indirect positive benefits on crew and fishing communities by eliminating unintentional violations, and letting crew to retain small amounts of cod for personal use.	Same as above.
Access Seasons		Section 4.1.6 & 4.2.7	(Section 6.2.7)	
Simultaneous access during June 15 to January 31	PA	Section 4.1.6	<u>Simultaneous</u> access will have positive impacts on fishing communities by providing more flexibility to fishermen about where and when to fish in order to revenues from these areas. Could have negative impacts as well, such as safety issues from fishing in a compressed season and the revenue loss stemming from fishing during a season in which scallops are spawning.	No significant cumulative impacts are anticipated on the scallop fleet and infrastructure because the overall scallop landings, revenues and fishing costs will not change in any significant way because of seasonal distribution of fishing activity.
Existing sampling frequency funded with a one percent TAC set-aside	PA	Section 4.1.7	Indirect benefits through increased compliance.	No significant cumulative effects on fishing communities are expected because there will be no significant changes in fishing incomes and employment.
Enforcement Provisions		Section 4.1.8	Section 6.2.8	
Trip declaration and notification	PA	Section 4.1.8.1	Indirectly provide positive benefits to the industry through enhanced perception of regulatory compliance. Extra paperwork, extra work, and the perception of being constantly watched will increase social costs, however.	Same as above.
Vessel operation and landing	PA	Section 4.1.8.2	Same as above.	Same as above.
More frequent VMS polling	PA	Section 4.1.8.3	Same as above.	Same as above.

Alternative	Preferred (PA) or Non-preferred (NPA)	Description of alternative	Cumulative Effects	Significance
Reporting Requirements		Section 4.1.9	Section 6.2.9	
Vessel monitoring systems	PA	Section 4.1.9.1	Same as above.	Same as above.
Vessel trip reports	PA	Section 4.1.9.2	Same as above.	Same as above.
Mechanical rotation alternatives		Section 4.1.10	Section 6.1.4 and 6.2.10	
Rotational access to portions of CA I, CA II, and the NLSA with two areas open each year beginning with CA II and the NLSA in 2004	PA	Section 4.1.10.1	Positive impacts from the predicted more even yield stream and reduction of bycatch, more predictable fishing, and less stressful working conditions. Greater economic benefits will improve the living standard for fishermen and their families.	No significant cumulative effects are expected because the revenues, incomes and fishing costs will not change significantly from what has been estimated for the Amendment 10 rotational access to the portions of Georges Bank groundfish areas.
Part-time and Occasional Trip and DAS Allocations		Sections 4.1.10 & 4.2.12	Section 6.2.11	
Trip allocations with unequal possession limits by permit, part-time allocations equal 40% of full-time allocations, and occasional allocations equal 1/12 th of a full-time allocation (Not to apply to 2004 Hudson Canyon Area allocations)	PA	Section 4.1.10.2	Positive economic impacts on the part-time limited access fleet and negative impacts on the occasional permit category vessels. Positive social impacts due to following historic shares between the different categories and valuing the concerns of equity. No significant impacts are expected, however, on overall scallop revenues, fishing costs, and employment, thus no overall effects on the fishing communities.	No significant cumulative effects are expected because the scallop revenues, fishing costs and employment in the scallop fishery will not change significantly compared to levels estimated with Amendment 10 trip allocation system.
Access for general category vessels			Section 6.2.13	
Access with enhanced reporting and a 2% TAC set-aside	PA	Section 4.1.11	Increase the revenues of the general category vessels by allowing access. It will increase fishing costs for these vessels due to VMS and other reporting requirements. The impacts on the limited access scallop fleet are expected to be minimal.	Cumulative effects on the fishing communities are not expected to be significant because scallop landings, revenues, and employment in the scallop fishery will not change significantly due to access by general category vessels.

7.0 APPLICABLE LAW

7.1 *Magnuson-Stevens Fishery Conservation and Management Act (Including National Standards and EFH)*

7.1.1 Compliance with National Standards

7.1.1.1 National Standard 1: Overfishing and Optimum Yield

“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 biological reference points and control rule for Atlantic sea scallops was revised and updated in Amendment 10 to the FMP, currently under review. The 2003 survey data, used in this framework adjustment to update the biological information, indicates that the scallop biomass is above the MSY biomass target and will remain above this level for the foreseeable future under either the proposed action or the No Action alternative. Also the updated analysis indicates that fishing mortality will remain below the overfishing threshold mortality rate, F_{max} , either with the proposed action or the No Action alternative.

The proposed action is not expected to cause overfishing to occur or to cause the stock to become overfished (see Section 6.1.1.1). Furthermore, the proposed action improves the FMPs ability to produce optimum yield with rotation area management, boosting the biomass in open scallop fishing areas (excluding the present controlled access areas). According to the analyses, the proposed action will allow a higher yield per recruit from the open areas, increasing the amount of more valuable, large scallops that will be available to the fishery. At the same time, the analysis in Section 6.2 shows that access allows the fishery to achieve optimum yield while minimizing impacts to habitat and bycatch.

The analysis also shows that reducing biomass in the proposed access areas is unlikely to cause the total biomass decline for the Georges Bank region. Considerable stock biomass and spawners will remain in the Georges Bank closed areas and in the proposed access areas, because the proposed action will have a time-averaged fishing mortality rate of 0.133, less than F_{MSY} .

7.1.1.2 National Standard 2: Best Available Science

“Conservation and management measures shall be based upon the best scientific information available.”

The information used in the framework adjustment analyses included the fishery data from the most recently completed fishing year (2002) and the most recent survey data (2003) collected by the NMFS on the R/V Albatross and by SMAST on industry-based surveys. Furthermore, the analyses were prepared by and peer reviewed by the Council's Scallop Plan Development Team and complies with the Data Quality Act (see Section 7.7). Data on habitat and affected bottom substrates were also derived from preliminary 2003 SMAST video survey of the proposed access areas, focusing on Closed Area I which was more controversial than the other proposed access areas. Thus, the information used for this framework adjustment is the best available data, which is presently available for analysis and relevant to the alternatives under consideration.

7.1.1.3 National Standard 3: Management Unit

“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.”

According to Amendment 10, presently under review, the target fishing mortality rate and stock biomass are applied to the scallop resource from NC to the US/CAN boundary. This encompasses the entire range of scallop stocks under Federal jurisdiction. Rotation area management furthermore allows the FMP to set area-specific mortality rates to achieve a resource wide mortality target and achieve optimum yield from the resource. The proposed action is consistent with this policy, because the open area DAS allocations are to be adjusted, consistent with this policy.

7.1.1.4 National Standard 4: Fairness and equity

“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 proposed action improves equity by allowing fishermen, vessel owners, and fishing communities to benefit from the scallop biomass that has built up in the Georges Bank closed areas. For the first time, vessels with general category scallop permits as well as vessels with limited access scallop permits will be able to fish in the proposed access areas that have been closed to scallop fishing since 1994 (except for two limited openings in 1999 and 2000). Some of the vessels with general category permits may have targeted scallops in these areas before they were closed and many more have been affected by the severe restrictions in other fisheries that are presently under rebuilding programs. Access therefore allows these vessels that may have been disadvantaged by the closures or are under severe restrictions in other fisheries to benefit from the surplus scallop biomass that exists in the access areas.

Secondly, the proposed action also fixes an unequal allocation of controlled access trips and days-at-sea (DAS) under Amendment 10. According to the FMP and allocation policies since 1994, vessels with part-time and occasional limited access scallop permits received 40% and 1/12th of a full-time allocation, respectively. The controlled access allocations in Amendment 10 provided fewer DAS and potential scallop landings for part-time vessels than would be consistent with this long-standing allocation policy. The Amendment 10 procedure to allocate no less than one trip per vessel also favored occasional vessels, which received a greater allocation than they would under this long-standing allocation policy. The adjustments in the proposed action would ensure that part-time and occasional vessels received a DAS allocation and had the potential to land scallops from access areas, which are consistent with the open area DAS allocations and the allocation policy before Amendment 10.

There are no alternatives in the proposed action, which by their nature disadvantage or unfairly discriminate against fishermen in various states. Although it will be more costly for vessels from Mid-Atlantic States to participate in the proposed access areas because of their location, the ability to exchange controlled access trips will mitigate this concern. Vessels that use scallop trawls (more prevalent in the Mid-Atlantic region) will be able to fish in the proposed access areas with dredges, or exchange trips to fish in areas where fishing with scallop trawls is permitted. This measure could increase costs to fishermen that customarily use and are authorized to use scallop trawls, but this conservation measure is

needed to minimize finfish bycatch and achieve optimum yield by keeping the access areas open as long as possible, keeping bycatch below thresholds that could increase groundfish mortality and affect groundfish rebuilding potential.

7.1.1.5 National Standard 5: Efficiency

“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.”

Amendment 10 demonstrated that several conservation measures also promote efficient use of fishery resources and include DAS allocations common scallop possession limits, and rotation management areas with linear boundaries. The limited access DAS allocations promote efficiency because unlike fleet-wide quota management, it does not force vessels to invest more capital to catch scallops more quickly than the next vessel.

The management measures in the proposed action enhance the FMP’s ability to efficiently utilize the fishery resources. Area access promotes a redistribution of fishing effort to areas where the catch rates are high, reducing fishing costs. Moreover, the proposed action would do this without causing vessels to fish at a frantic pace, a response that could cause waste of fishery resources and capital. Under the proposal, vessels would be allocated and charged 12 DAS for controlled access trips, even though it is expected that a vessel will take only six to eight days to land the vessel’s trip limit. This tradeoff provision is expected to allow vessels to fish at a more leisurely pace, taking the time to target the desired scallop beds more efficiently and avoid unwanted bycatch.

Several other measures also may have an effect on efficiency, but no measures are included to effect an economic allocation. Since bycatch will be carefully monitored through enhanced sea sampling and there will be little incentive to target groundfish, the proposed action includes an increase in the groundfish possession limit on controlled access trips, helping to promote efficiency by reducing waste caused by discarding. The new possession limits are closer to the expected catches per trip, but are not high enough to cause vessels to target or partially target species other than scallops.

The proposed action would change the limited access scallop possession limits that were identified by Amendment 10 as being a measure to achieve efficient utilization of fishery resources. Although it would be more effective and easier to enforce a single scallop possession limit in all areas for all vessel classes, it was necessary to change the part-time and occasional scallop possession limits to achieve a more equitable DAS allocation. Since a vessel with a certain type of limited access permit will have a single possession limit, the measure is not expected to detract from the enforceability of the scallop possession limit. Moreover, except for the Hudson Canyon Area in 2004 which cannot be changed by this framework adjustment, the possession limits for each limited access classification will be the same in all areas and will be unaffected by the one-to-one exchange provision.

The general category scallop fishery is managed with open access and it is impossible to know which of the approximately 2,200 permits have a history of fishing in the access areas, or who would be likely to do so. It is therefore impossible to make specific allocations to individual vessels to promote efficiency. Instead, the proposed action would set a limit on the total number of controlled access trips that the fleet of general category vessels may take during the season. This approach could create a rush to take trips before other vessels take them. The analysis suggests that, considering the total number of trips that will be available, the number of vessels that typically target scallops under general category rules, the

locations of these vessels, and the compliance costs; a derby-style fishing behavior that degrades efficient use of fishery resources is unlikely to develop, however.

7.1.1.6 National Standard 6: Variations and Contingencies

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

The proposed action does not detract from, and in fact enhances, the FMP’s ability to adapt to changing resource conditions. The access program is expected to allow the FMP to reduce fishing effort in open areas, increasing the scallop biomass in the open areas, and potentially allowing the FMP greater flexibility in the future to achieve optimum yield through rotation area management. Amendment 10 discusses in more detail the FMPs ability to adjust to variations and contingencies using DAS allocations and rotation area management.

7.1.1.7 National Standard 7: Cost and Duplication

“Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.”

The proposed action in this framework adjustment does not introduce any new measures that are unnecessary or duplicate measures already in place. Area access (i.e. mechanical rotation), EFH closed areas, and DAS controls were shown in Amendment 10 to be a necessary component of the FMP to achieve the annual mortality targets and prevent the stock from becoming overfished.

The proposed action in fact reduces cost and duplication by modifying the EFH closed area boundaries to be consistent with those that the Council approved in Amendment 13 to the Multispecies FMP. It also proposes access boundaries that are consistent with and the compliment of these boundaries, to minimize enforcement and compliance costs. Changes in the scallop possession limit for controlled access trips were necessary to mitigate a potential equity issue that arose for part-time and occasional limited access vessels, due to the way that controlled access trips were allocated in Amendment 10.

7.1.1.8 National Standard 8: Communities

“Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.”

The characteristics and participation of fishing communities involved in the scallop fishery were discussed in Section 7.1.1.3 of the Amendment 10 FSEIS, and the impacts of rotation area management were also discussed in Section 8.8. The proposed action in this framework adjustment will not change these impacts, except that fishing communities in the proximity of the proposed access areas are likely to benefit from higher landings and economic activity, while fishing communities that are distant from these areas are likely to experience adverse impacts. Both of these effects are relatively short-term, due to the nature of area rotation and variable scallop recruitment. The proposed action to allow access to the Georges Bank closed areas will also partially reverse the impacts from the closures since 1994, since the

communities in New England were adversely impacted and the communities in the Mid-Atlantic benefited from the southward shift of scallop fishing effort during the 1990s.

One potential adverse impact on fishing communities could have arisen by the prohibition of scallop trawls in the access areas and the area-specific application of the associated DAS allocations. This potential effect has been mitigated by the ability for scallop trawl vessels to switch to using dredges without threatening their authorization to use trawls elsewhere, and by the ability for vessels to exchange trips for other areas where fishing with scallop trawls is allowed.

The economic and social impacts, which have a large role in effects on fishing communities, are analyzed and discussed in Sections 6.1.4, 6.2, and 6.3.7.7.

7.1.1.9 National Standard 9: Bycatch

“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.

Because the proposed action includes access to areas that are otherwise closed to achieve groundfish conservation, the proposed action in this framework adjustment includes several measures to minimize bycatch and to ensure that groundfish mortality does not cause groundfish mortality to increase to a point that it would threaten the rebuilding prognosis for overfished groundfish. These measures include a precautionary TAC for yellowtail flounder (a species that is vulnerable to capture by scallop dredges), seasons for access (to avoid peak groundfish spawning months), enhanced sea sampling (to monitor and assess bycatch), and changes in the finfish possession limits (to minimize bycatch). 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. Amendment 10 showed that both these measures had the real potential to reduce finfish bycatch by reducing fishing time and allowing greater escapement of small finfish.

The direct and indirect impacts of these measures are analyzed and described in Sections 6.1.1.2 to 6.1.1.4, and in Sections 6.2.5.1.1, 6.2.6.1, and 6.3.7.3. Bycatch of skate is also analyzed and discussed in an official skate baseline review (Section 7.1.4), triggered by the fishery access to the groundfish mortality closed areas. For some species, the proposed action is at worst a wash and a substantial benefit for many species, especially those that are more abundant in open fishing areas where scallop fishing occurs.

7.1.1.10 National Standard 10: Safety

“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. Although the crew limits induce fishermen to work long watches on a DAS, evidence that this has caused casualties to increase is not apparent at this time.

Section 6.1.5.1 in this document analyses and discusses the potential effects of the proposed action on safety, especially with regard to the access season that was a controversial issue. This analysis shows that there is no reason to expect that the proposed measures will have an adverse effect on human life at sea. There may be an issue associated with small vessels with general category permits fishing in the proposed access areas, but it is no worse than the threats to safety from fishing in other offshore scallop areas. More importantly, the proposed action does not force vessels to fish in the offshore areas through restrictions on inshore fishing or from other measures.

7.1.2 Compliance with Provisions of the Act

Section 6.2 of Amendment 10 to the Atlantic Sea Scallop FMP describes and analyzes the FMP's compliance with the required provisions of the Magnuson Act, §303(a). Nothing in this framework adjustment affects compliance with foreign fishing measures, a description of the fishery, a discussion of pertinent fishery data, allowances for temporary adjustments for safety, the fishery impact statement, objectives to prevent overfishing, effects on recreational catch and release, or the description of the fishery.

The framework adjustment improves the ability of the FMP to achieve maximum sustainable yield and optimum yield, by making more of the scallop resource available to the fishery without increasing the net adverse effects on the environment, with particular regard to bycatch and habitat. It also allows a reduction in open area DAS that are needed to achieve optimum yield, associated with the target fishing mortality rate ($F=0.2$). The action therefore reduces fishing mortality in open fishing areas to levels that are more consistent with improving yield-per-recruit, and over the long term increases maximum sustainable yield because more of the scallop resource will become available for producing yield.

The framework adjustment makes adjustment to essential fish habitat closures to be consistent with those adopted in other FMPs. This action enhances the effectiveness of the EFH conservation measures in the Atlantic Sea Scallop FMP; because the new EFH closed areas are closed to all bottom-tending mobile gears that were recognized as having an adverse impact on EFH. No changes to EFH designations are being proposed as part of this framework adjustment.

The framework adjustment proposes to allocate trips to scallop fishing vessels, with fishing opportunities in proportion to their DAS allocations for full-time, part-time, and occasional vessels. These proportional allocations were established by Amendment 4 in 1994, when vessels originally qualified for limited access status. These allocations have been deemed fair and equitable amongst fishery sectors.

Moreover, for the first time, Framework Adjustment 16 allows vessels with general category permits to target scallops in the access areas, via a TAC set-aside and quota of total number of trips by the fleet, along with some added reporting requirements. Many vessels with general category permits use them to land up to 400 lbs. of scallop meats per trip, caught while targeting other species. About 200 vessels (according to the SEIS for Amendment 10) have in the recent past targeted scallops under general category rules, and this framework adjustment allows them a generous ability to participate in the area access program.

Using a discretionary provision, this framework adjustment uses catch and gear limits to regulate the fishery. A hard TAC (aka quota) would be set annual to regulate the landings of sea scallops and the catches of yellowtail flounder from the access areas, preventing the catches to exceed biological limits.

Also, additional gear restrictions will apply to prevent excessive catches of regulated groundfish and other finfish in the access areas, as well as require more size selective scallop fishing gear to reduce mortality on smaller scallops that may be caught incidentally.

Furthermore, TAC set-asides would be established by the framework adjustment to enhance the coverage of at-sea observers and promote related scientific research. Vessels chosen to carry an at-sea observer will be required to do so, or will not be permitted to take further area access trips, unless the government finds the vessel unsuitable to carry an observer. Vessels may be required to carry an at-sea observer under a discretionary provision of the Act. Vessels that carry an observer will be partially compensated for the cost of the observer by allowing the vessel to land more scallops than the normal scallop possession limit on an area access trip.

The framework action also allows vessels the opportunity to participate in scientific research, which may be funded through a TAC set-aside for this purpose. Some of the research may focus on developing new and better ways to avoid bycatch or reduce bycatch mortality. Both are issues addressed by discretionary provisions of the Act.

7.1.3 EFH Assessment

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

7.1.3.1 Description of Action

The proposed action is described in Section 4.1. As an overview, the primary objective of the action is to provide limited access into portions of the groundfish closed areas to the scallop fishery. This action also proposes to make the habitat closed areas proposed in Amendment 10 to the Scallop FMP consistent with the habitat closed areas proposed in Amendment 13 to the Multispecies FMP.

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, however, 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. Thus, the range of this activity occurs across the designated EFH of all Council-managed species (see Amendment 9 to the Atlantic Sea Scallop FMP for a list of species for which EFH was designated, the maps of the distribution of EFH, and descriptions of the characteristics that comprise the EFH). This activity also occurs across EFH designated by the Mid-Atlantic Council for species such as black sea bass, ocean quahog, scup, spiny dogfish, summer flounder, and tilefish (see the Dogfish, Surf clam and Ocean Quahog, Summer Flounder, Scup and Black Sea Bass, and Tilefish FMPs for relevant information on the characteristics and distribution of EFH designated for these species). 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.

7.1.3.2 Assessing the Potential Adverse Impacts

Although scallop dredges have been shown to be associated with adverse impacts to some types of bottom habitat (NEFMC 2003), this action does not propose to increase current levels of fishing activity in the U.S. EEZ. The closed area access measures would focus scallop fishing in the most

productive areas, minimizing bycatch and bottom contact time, while providing high yield and net benefits. Section 6.2 provides a complete assessment of the potential habitat impacts of the proposed measures. As described above, the actions proposed in this framework adjustment are expected to result in a slight decrease in actual fishing pressure on EFH and a substantial reduction in actual fishing time in scallop fishing areas outside of Closed Area I, Closed Area II, the Nantucket Lightship Area, and the Hudson Canyon Area. Over time and space that is addressed by this actions, it will not have any significant adverse impacts on the EFH of any managed species relative to the baseline conditions established under Amendment 10.

7.1.3.3 Minimizing or Mitigating Adverse Impacts

Section 6.1.2 (Summary of Aggregated Habitat Impacts) demonstrates that the overall habitat impacts of all the measures combined in this action have neutral impacts on habitat, compared to the habitat benefits that will result from implementation of Amendment 10 of the Scallop FMP and Amendment 13 of the Multispecies FMP. Because the impacts are less than minimal and are temporary in nature and a framework action is considered a minor action, measures to minimize adverse effects on EFH are not necessary. Additionally, Amendment 10, currently under Secretarial review, to the Atlantic Sea Scallop FMP implemented measures to mitigate adverse effects of the Scallop fishery on EFH. Although one of the major measures used to meet the EFH requirements (habitat closed areas as described in Alternative 6) in Amendment 10 is modified by this action to match the habitat closed area implemented under Amendment 13 to the Multispecies FMP, the habitat impacts of the proposed action are neutral, and no additional measures are necessary to minimize impacts of the fishery on EFH

7.1.3.4 Conclusions

The action proposed under this framework adjustment should have no more than a minimal adverse effect on EFH of Federally managed species. Because there are no substantial adverse impacts associated with this action, an abbreviated consultation may be the only required action.

7.1.4 Skate Baseline Review

The Skate FMP identified and characterized a baseline of management measures in other fisheries that provide additional conservation benefits to skate species. The FMP requires that if the Council initiates an action in another FMP that changes one or more of the baseline measures such that the change is likely to have an effect on the overall mortality for a species of skate in a formal rebuilding program, then a baseline review is required.

A baseline review must be initiated if one of seven categories of management measures are changed which have been identified as beneficial for skates. The seven categories of management measures identified in the Skate FMP are: (i) NE Multispecies year-round closed areas; (ii) NE Multispecies DAS restrictions; (iii) Gillnet gear restrictions; (iv) Lobster restricted gear areas; (v) Gear restrictions for small mesh fisheries; (vi) Monkfish DAS restrictions for monkfish only permit holders; and (vii) Scallop DAS restrictions (See Section 4.1.6 of the Skate FMP for more details). Since Framework 16/39 proposes to allow access for scallop vessels into portions of the groundfish mortality closed areas, the Skate PDT must evaluate the potential impacts of this change. Furthermore, since total allocated DAS is expected to increase slightly for limited access vessels, the Skate PDT must also evaluate whether the additional allocated DAS will impact skate mortality. In general, this section will evaluate whether limited access into portions of the groundfish mortality closed areas by the scallop fleet and increases in allocated DAS will have a greater impact on overall skate mortality as compared to the additional benefits of other area closures and effort reductions implemented in the action.

It is important to point out that the skate baseline review is only required for skate species that are currently in a formal rebuilding program. Of the seven skate species managed under the Northeast Skate Complex FMP, only two species are in a formal rebuilding program: thorny and barndoor. Therefore, this baseline review will only evaluate the impacts of this framework action on the mortality rates of these two species. Furthermore, the Skate FMP identifies only seven categories of management measures that would trigger a baseline review. Therefore, while there may be other measures in this framework action that could indirectly increase or decrease skate mortality, the baseline review is only required to evaluate the seven identified categories of measures. Therefore, this baseline review will assess only two of the seven categories of management measures: a change in the groundfish mortality closed areas, and an increase in total limited access scallop DAS allocation.

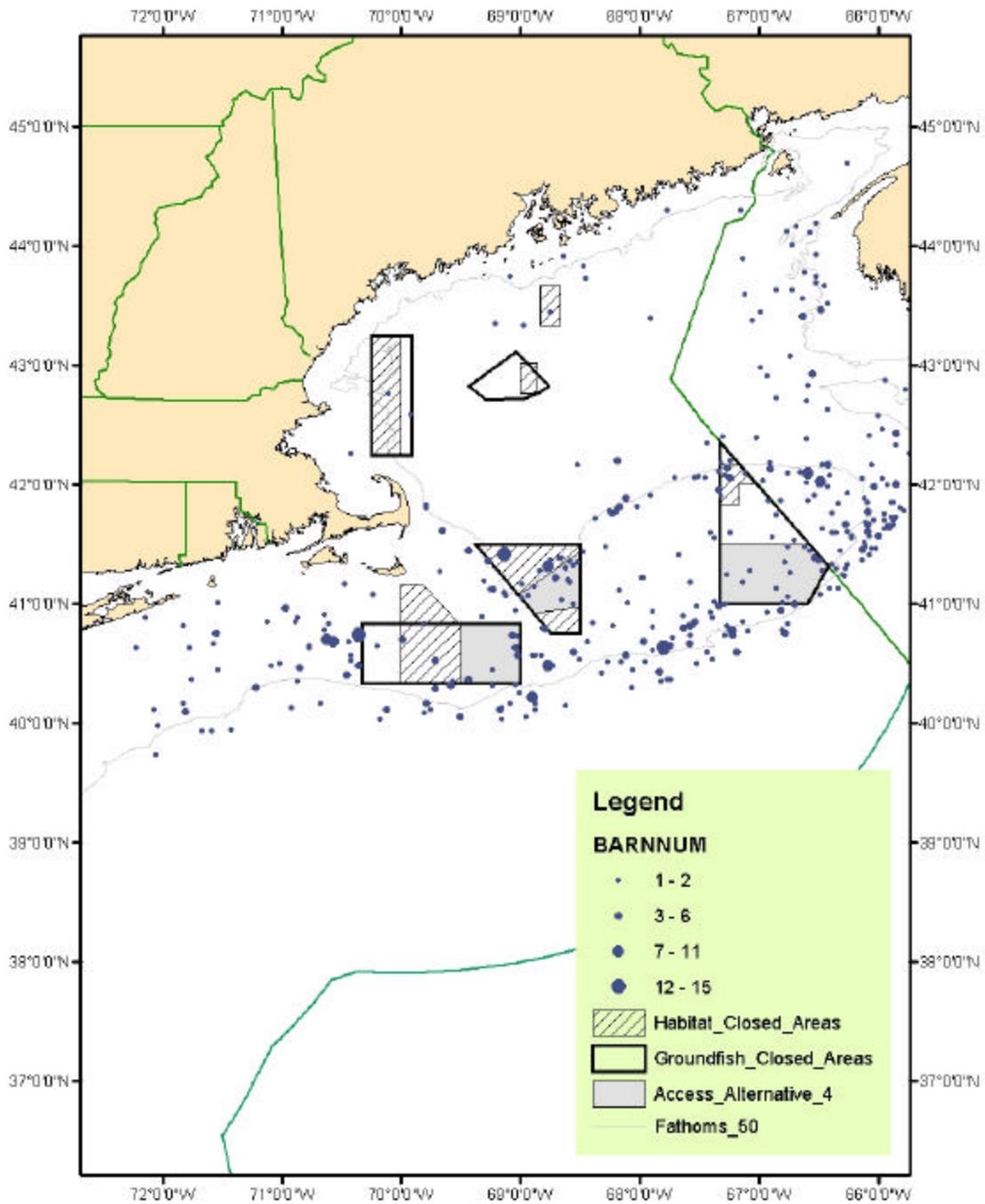
7.1.4.1 Updated Stock Status for Thorny and Barndoor Skates

The overfishing definitions in the Skate FMP are based on a three-year moving average survey index. Since the FMP was submitted there have been additional biomass surveys that may show new trends in skate population rebuilding. Table 144 shows the Autumn survey indices for the two species of skate that are in a formal rebuilding program. Updated values for 2002 and 2003 have been added to the bottom of the table, as well as a new three-year average (2001-2003) for each species. According to the respective three-year average updated through 2003, barndoor biomass has increased, while thorny biomass has declined slightly. Map 24 and Map 25 show the spatial distributions of barndoor and thorny skates based on NMFS Autumn trawl survey data (1963 – 2003). In general, barndoor skate is distributed on Georges Bank and southern New England, while thorny skate is found primarily in deeper waters throughout the Gulf of Maine, and secondarily, along the southern edge of Georges Bank. Map 26 describes the locations of all survey tows taken from the NMFS Autumn trawl survey from 1997 through 2003. This map illustrates all the tows recorded during this time series, not just the tows that caught skates. These years were selected to focus on more recent trawl data, as well as select a time series with several years before and after the previous scallop access program in 2000. During these seven years, 2,300 tows were reported.

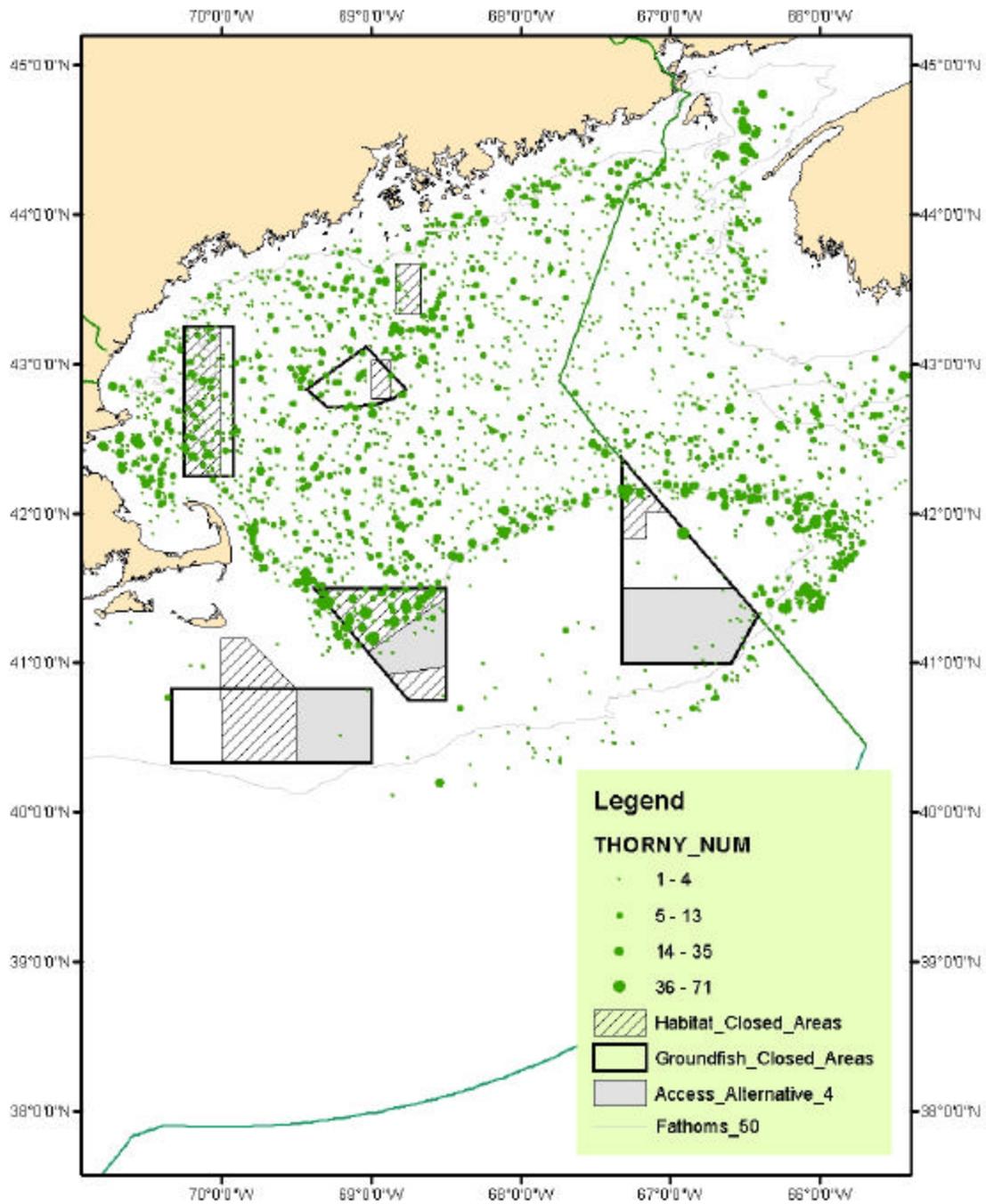
This baseline assessment focuses on the Autumn survey for several reasons. First, the Autumn survey was determined to be the most appropriate survey to use for overall biomass estimates for these two species. Second, the spatial distributions of the two surveys are relatively consistent for barndoor and thorny skates, thus analyzing both is redundant. Most importantly, this framework action proposes that all three access areas open simultaneously from June 15th to January 31st, a time period that overlaps the autumn survey, not the spring survey. Since the spring survey was conducted no earlier than February 26, and no later than May 24 for the entire 40-year time series, incorporating the spring survey biomass data is irrelevant for assessment of this access program.

Table 144 – NEFSC Autumn survey indices and updated status of Barndoor and Thorny skates

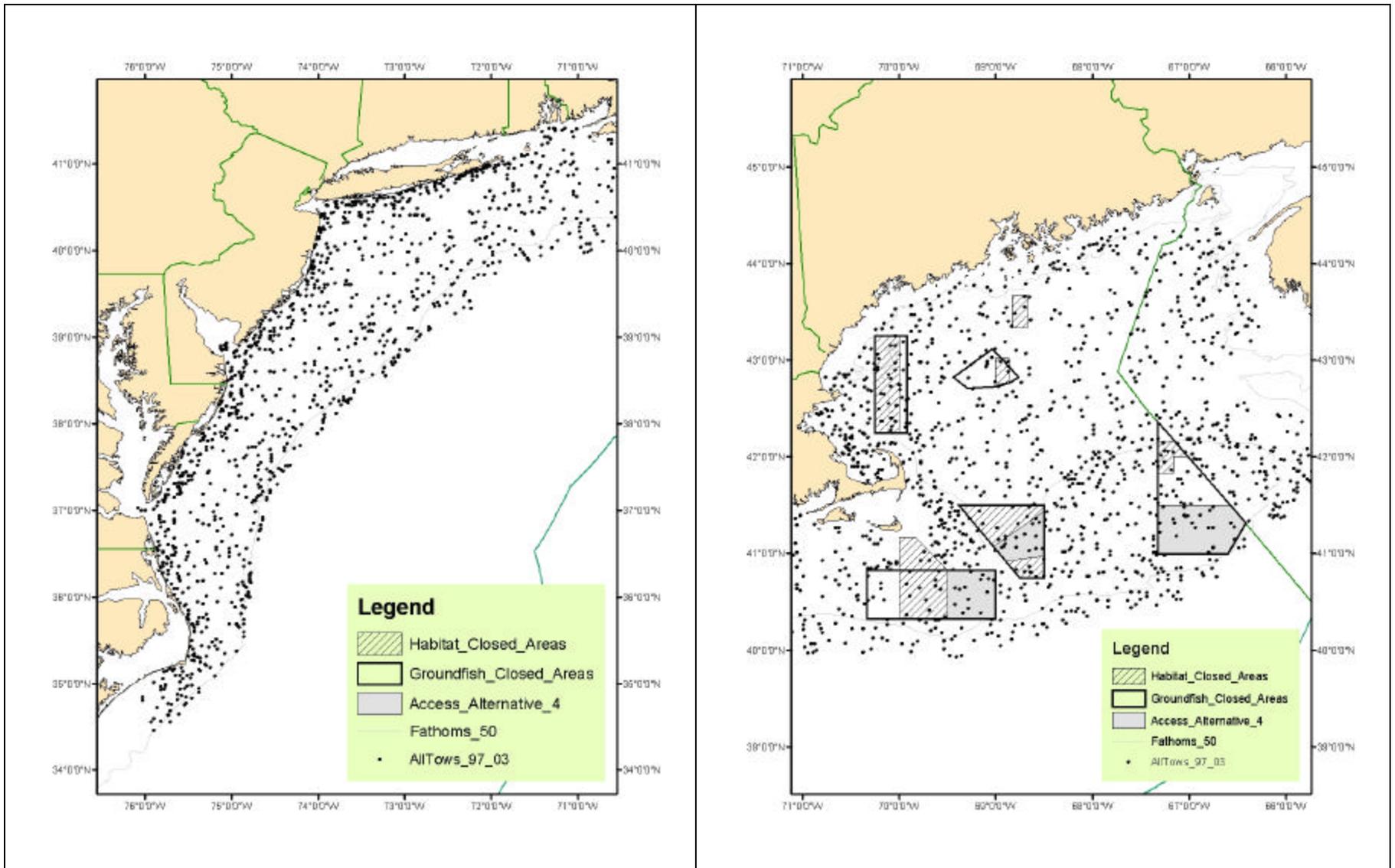
YEAR	BARNDOOR	THORNY
	AUTUMN SURVEY (kg/tow)	AUTUMN SURVEY (kg/tow)
1992	0.002	0.96
1993	0.14	1.66
1994	0.04	1.51
1995	0.11	0.78
1996	0.04	0.81
1997	0.11	0.85
1998	0.09	0.65
1999	0.30	0.48
2000	0.29	0.83
2001	0.54	0.33
1999-2001 Three-year average	0.38	0.55
Values above this line are from the Skate FMP. Values below are new updates.		
2002	.78	.44
2003	.55	.74
2001-2003 Three-year average	0.62 <i>(+ 0.24 since FMP)</i> <i>(0.19 below threshold)</i>	0.50 <i>(- 0.05 since FMP)</i> <i>(1.7 below threshold)</i>
SAW 30 Biomass Threshold	0.81	2.20
CURRENT STATUS	OVERFISHED	OVERFISHED



Map 24 – Distribution of Barndoor skate from NMFS Autumn trawl survey data (1963 – 2003).



Map 25 - Distribution of Thorny skate from NMFS Autumn trawl survey data (1963 –2003).



Map 26 – Location of all survey tows from the NMFS Autumn trawl survey from 1997 through 2003 (*2,300 representative tows recorded*).

Number of skates in the entire survey area

Table 145 represents the total number of skates caught during the most recent time series (1997-2003) and for the entire 40-year time series (1963-2003). The survey area includes Federal waters from Maine to North Carolina, as well as some inshore locations and stations in Canadian waters. Between 1997 and 2003, there were 2,300 representative survey tows in the entire survey area, and 104 tows (4.5%) caught one or more barndoor skate. The average number of barndoor skates caught per year from 1997 to 2003 on the Autumn trawl survey was 27.0, significantly greater than 17.7 for the entire time series (1963-2003). These values suggest that overall, barndoor skate populations are increasing in terms of average number of barndoor skates caught each year. On the other hand, the average number of thorny skates caught per year has decreased for the more recent time series, as compared to the average for the entire time series (88.9 for 1997 through 2003 compared to an average 258.2 caught per year for 1963 through 2003). For the entire time series, about 19.8% of the survey tows caught one or more thorny skates, but the majority of stations in the Gulf of Maine had positive tows for thorny skate. It is important to point out that since neither barndoor nor thorny skates live in the Mid-Atlantic region, including those stations in the total autumn survey database reduces the overall percent of tows that caught skates.

Table 145 – Number of barndoor and thorny skates from the NMFS Autumn trawl survey for two time periods: 1997 through 2003 and 1963 through 2003.

		Autumn Survey (1997-2003) 2,300 records	Autumn Survey (1963-2003) 14,188 records
BARNDOOR	Total Number of barndoor caught	189	727
	Total weight of barndoor caught (kg)	613	2,147
	Number of tows in the entire survey area that caught barndoor	104 (4.5%)	371 (2.6%)
	Average number of barndoor skates caught per year	27.0	17.7
THORNY	Number of thorny skates	622	10,586
	Total weight of thorny caught	804	22,758
	Number of tows in the entire survey area that caught thorny	224 (9.7%)	2,816 (19.8%)
	Average number of thorny skates caught per year	88.9	258.2

Number of skates found within the groundfish mortality closed areas

Table 146 depicts the number of skates caught on the Autumn survey within the groundfish mortality closed areas. This table documents the “baseline” skate mortality protection afforded by the groundfish mortality closed areas, as described in the Skate FMP. It is important to note that these values are only an estimate of abundance inside versus outside of the groundfish mortality closed areas because station density inside and outside the closed areas is not consistent from year to year. Therefore, it is difficult to compare the number of skates caught inside versus outside the groundfish mortality closed areas. The NMFS survey is stratified based on predefined strata, not a specific number of stations inside and outside the closed areas. With that in mind, 123 individual barndoors of the 727 barndoor skates recorded in the full time series were from within the boundaries of the groundfish closed areas (17%). In recent years, the percent of barndoor skates found within the groundfish mortality closed areas has

increased to 23% (43 out of the total 189 barndoor skates caught in the database from 1997 to 2003). The average number of barndoor skates caught per year within the groundfish mortality closed areas has increased as well to 6.1 from 3.0 for the full time series. In terms of thorny skates, the percent found within the groundfish mortality closed areas as compared to the entire area has declined to 9% for 1997-2003 (59 / 622) from 13% for 1963-2003 (1,391 / 10,586). Furthermore, the average number of thorny skates caught per year in the groundfish mortality closed areas has declined to 8.4 for the more recent time series, as compared to an average of 33.9 for the entire time series.

Table 146 – Number of barndoor and thorny skates from the Autumn Survey caught within the boundaries of the Groundfish closed areas (for two time periods: 1997 through 2003, and 1963 through 2003).

		Autumn Survey (1997-2003) <i>2,300 records</i>	Autumn Survey (1963-2003) <i>14,188 records</i>
BARNDOOR	Total Number of barndoor caught	43	123
	Total weight of barndoor caught	170	327
	Number of tows in the GF mortality closed areas that caught barndoor	23	60
	Average number of barndoor skates caught per year	6.1	3.0
THORNY	Number of thorny skates	59	1,391
	Total weight of thorny caught	92	2,720
	Number of tows in the GF mortality closed areas that caught thorny	22	266
	Average number of thorny skates caught per year	8.4	33.9

Number of skates found within the proposed habitat closed areas

One measure proposed in this framework is the modification of habitat closed areas proposed in Amendment 10 to the Scallop FMP to be consistent with the habitat closed areas proposed in Amendment 13 to the NE Multispecies FMP. The proposed habitat closed areas are depicted as the hatched areas in Map 24. Parts of this alternative are within the previously closed groundfish mortality closures, and some of the areas are outside the groundfish mortality closed areas (north of the Nantucket Lightship closed area and on Jeffrey’s Bank). Since all these areas will be closed indefinitely to all mobile, bottom tending gears, it can be assumed that the skates found in these areas will benefit as a result of this action. According to Map 24 and Map 25 the modification is likely to benefit both skate species.

Table 147 describes the number of skates caught within the boundaries of the proposed habitat closed areas from two survey time periods: 1997-2003 and 1963-2003. According to the more recent time series data (1997-2003) a significant portion of the total barndoor skates recorded in that dataset are from within the boundaries of the habitat closed areas (about 14%, or 27 out of 189 total for all 7 years). Furthermore, about 9% of the total number of thorny skates recorded from the same dataset is from within the proposed habitat closed areas, particularly the northern portion of Closed Area I and the Western Gulf of Maine closure. Although the habitat closed areas would not substantially increase the protection afforded these two skate species, they would maintain the protections currently provided by the groundfish mortality closed areas. The habitat closed areas on Georges Bank will impact the scallop fishery more than the habitat closed areas in the Gulf of Maine, because scallop fishing effort is more

prevalent on Georges Bank. Thorny skates would be expected to benefit directly from the habitat closed areas in the Gulf of Maine proposed in this framework action, but because there is not significant scallop dredge activity in those areas the benefits would derive because these habitat areas are also proposed to be closed to all mobile bottom tending gears under the NE Multispecies FMP. This would most likely benefit thorny skate mortality within the WGOM, Cashes Ledge and Jeffrey's Bank habitat closed areas (Map 25).

Table 147 - Number of barndoor and thorny skates from the Autumn Survey caught within the boundaries of the proposed habitat closed areas proposed in both the Multispecies and Scallop FMPs (for two time periods: 1997 through 2003 and 1963 through 2003).

		Autumn Survey (1997-2003) <i>2,300 records</i>	Autumn Survey (1963-2003) <i>14,188 records</i>
BARNDOOR	Total Number of barndoor caught	27	58
	Total weight of barndoor caught	140.9	197
	Number of tows in the habitat closed areas that caught barndoor	8	21
	Average number of barndoor skates caught per year	3.9	1.4
THORNY	Number of thorny skates	55	1,158
	Total weight of thorny caught	82	2,108
	Number of tows in the habitat closed areas that caught thorny	19	193
	Average number of thorny skates caught per year	7.9	28.2

Number of skates found within the proposed access areas

This framework action also proposes to open portions of the groundfish mortality closed areas to scallop vessels on a limited basis; this is the measure that initiated the skate baseline review process. Since the groundfish mortality closed areas were considered part of the baseline for skate mortality in the Skate FMP, it is possible that allowing access into portions of the closed areas may increase skate mortality. Table 148 depicts the number of barndoor and thorny skates caught within the proposed access areas during the NMFS bottom trawl survey time series. It is important to point out that the NMFS trawl survey is conducted with an otter trawl, while the scallop access program is limited to dredge vessels only, therefore this difference in gear type may impact the level of potential bycatch in these areas. According to Table 148, about 7% of the total barndoor skates caught in the survey from 1997 to 2003 were from within the proposed access areas (14 out of a total 189), which is about half of the 14% found within areas proposed as habitat closures. Essentially no thorny skates were caught within the proposed access areas from both time series; only 3 out of 622, or 0.5% were caught in the proposed access areas from 1997 to 2003, while only 52 out of 10,586 thorny skates (0.5%) were found within the proposed access areas from 1963 to 1997. Therefore it can be concluded that the limited access program will have virtually no affect on thorny skate mortality, based on the NMFS Autumn trawl survey database.

Furthermore, according to Map 25, the proposed access areas are located on the periphery of the range of thorny skate distribution. Fishing on Georges Bank would be unlikely to have a significant impact on thorny skate mortality. In fact, if scallop fishing effort from parts of the Gulf of Maine and the Great South Channel shifts into the access areas, then fishing-related thorny skate mortality would be

expected to decrease as a result of this action as fishing effort would decrease in areas where thorny skates are more abundant. The updated stock status information does suggest that thorny skates are not rebuilding (Table 144). The significant reduction of overall fishing effort proposed in both Amendment 13 to the Multispecies FMP and Amendment 10 to the Scallop FMP should benefit thorny skate recovery.

As proposed in Amendment 13, the DAS allocated to target any groundfish stock has been reduced by about 35%. Furthermore, allocated DAS for the scallop fishery has been reduced as well; for example, Amendment 10 proposes to allocate 62 DAS per limited access vessel in the open areas (outside the access program), and 48 DAS in the Hudson Canyon closed area, for a total of 110 DAS if access is not granted into the groundfish mortality closed areas. The total DAS analyzed as the baseline under the Skate FMP was 120 DAS per limited access vessel, therefore overall effort allocated is less under Amendment 10 as compared to the baseline. However, if access is granted through this framework, then DAS is expected to increase slightly; the assessment of the impacts of this increase in DAS on skate mortality is analyzed in Section 7.1.4.3.

As a result of significant DAS reductions in the Multispecies plan and effort shifts in the scallop fishery as a result of this framework action, the amount of overall fishing effort is expected to be less than baseline levels described in the Skate FMP. This reduction in fishing effort, particularly in areas like the Great South Channel where current effort overlaps with skate distribution, is expected to have positive impacts on thorny skate mortality by reducing the overall amount of thorny skate bycatch in both the groundfish and scallop fisheries. Based on the spatial distribution of thorny skates, as well as the overall reduction of fishing effort in this region as a result of Amendment 13 and Amendment 10, it is clear that this access program will not have negative impacts on the thorny skate population; therefore, the remainder of this assessment will focus on the potential impacts of the access program on barndoor skate mortality only.

Table 148 - Number of barndoor and thorny skates from the Autumn Survey caught within the boundaries of the access areas proposed in Framework 16/39 (for two time periods: 1997 through 2003 and 1963 through 2003).

		Autumn Survey (1997-2003) <i>2,300 records</i>	Autumn Survey (1963-2003) <i>14,188 records</i>
BARNDOOR	Total Number of barndoor caught	14	59
	Total weight of barndoor caught	38.4	145
	Number of tows in the proposed access area that caught barndoor	12	34
	Average number of barndoor skates caught per year	2.0	1.4
THORNY	Number of thorny skates	3	52
	Total weight of thorny caught	4.1	45
	Number of tows in the proposed access area that caught thorny	2	25
	Average number of thorny skates caught per year	0.4	1.3

7.1.4.2 Barndoor Skate Bycatch in Previous Access Programs

Barndoor skate bycatch levels recorded on observed trips in the 2000 scallop access program have been summarized in order to assess the potential barndoor skate bycatch in the access program proposed in this framework. The proposed access area boundaries are slightly different for this access program than they were in 2000. This section will also examine the barndoor skate catch from the NMFS Autumn trawl survey to assess whether the access program has impacted overall skate mortality. It is important to keep in mind that skates are mobile species; therefore, any spatial analysis of skate distribution is an estimate only. For example, it is very likely that the skates recorded within the access area in 2000, have moved into other areas since they are relatively strong swimmers.

The scallop fleet was granted access into the southern portion of Closed Area II in 1999, and the observer data collection focused on yellowtail flounder bycatch; therefore, the data are not applicable to monitor barndoor skate bycatch. In the access program in 2000, a significant number of trips were observed, and the number of barndoor skates caught in the dredges was recorded. Map 27 depicts the locations of observed tows that had positive barndoor catch during the 2000 access program. Note that the location of each tow was rounded to the nearest minute; that is why the data appear to be in a grid. Some points have multiple tows for the same location; for example, the 37 points that are shown in the Nantucket Lightship closed area actually represent 65 observed tows; one point overlaps another, and if the amount of barndoor bycatch is within the same category (1-50 lbs.) for both points, then only one point is reflected in the map. However, the total number and weight of all tows is summarized in Table 149, even overlapping tows. Any locations rounded just outside of the boundaries of the access areas were included in this analysis. Note that the map displays weight of bycatch in pounds, while the NMFS survey records weight in kilograms (one pound equals about 0.45 kg). Observed tows with less than one pound of barndoor skate bycatch are not shown.

Of the 8,719 observed tows observed within the boundaries of the 2000 access program, about 1,762 tows contained at least one barndoor skate, totaling 26,254.5 lbs. (20.2%), or 11,909 kg of barndoor skate bycatch (Table 149). Significantly more tows were observed in Closed Area II (64% of the total observed tows) as compared to the other access areas, and about 84% of the total observed barndoor bycatch was from within Closed Area II. Overall, 20.2% of the total observed tows within the access areas had barndoor bycatch. For reference, the number of trips taken in each access area in 2000 is summarized in Table 150. About 45% of the total 236 access trips were taken in Closed Area I, 33% in Closed Area II, and 22% in the Nantucket Lightship Access Area.

It should be noted that the level of barndoor bycatch might be impacted by gear type. The Skate PDT discussed the possibility that barndoor bycatch levels were higher on the observed scallop trips as compared to the NMFS trawl survey because scallop dredges move faster through the water. Since barndoor skates are strong swimmers, they may be able to avoid the trawl net more effectively than faster moving dredges, thus it is possible that catch rates are lower on trawl survey tows than on observed scallop dredge tows.

Table 149 – Number and weight of barndoor skate (BRN) bycatch on observed tows in the 2000 scallop access program in each access area. *Source: NMFS Observer Database*

Access Area	Total number and percent of total observed tows in 2000 access areas ⁶⁴	Total number of observed tows with BRN catch	Percent of observed tows in each area with BRN catch	Total pounds and percent of total BRN bycatch caught in each area on observed tows
Nantucket Lightship	870 (10%)	65	7.5%	377.3 (1%)
Closed Area I	2,288 (26%)	245	10.6%	3,942.4 (15%)
Closed Area II	5,561 (64%)	1,452	26.1%	21,934.8 (84%)
Total	8,719	1,762	20.2%	26,254.5

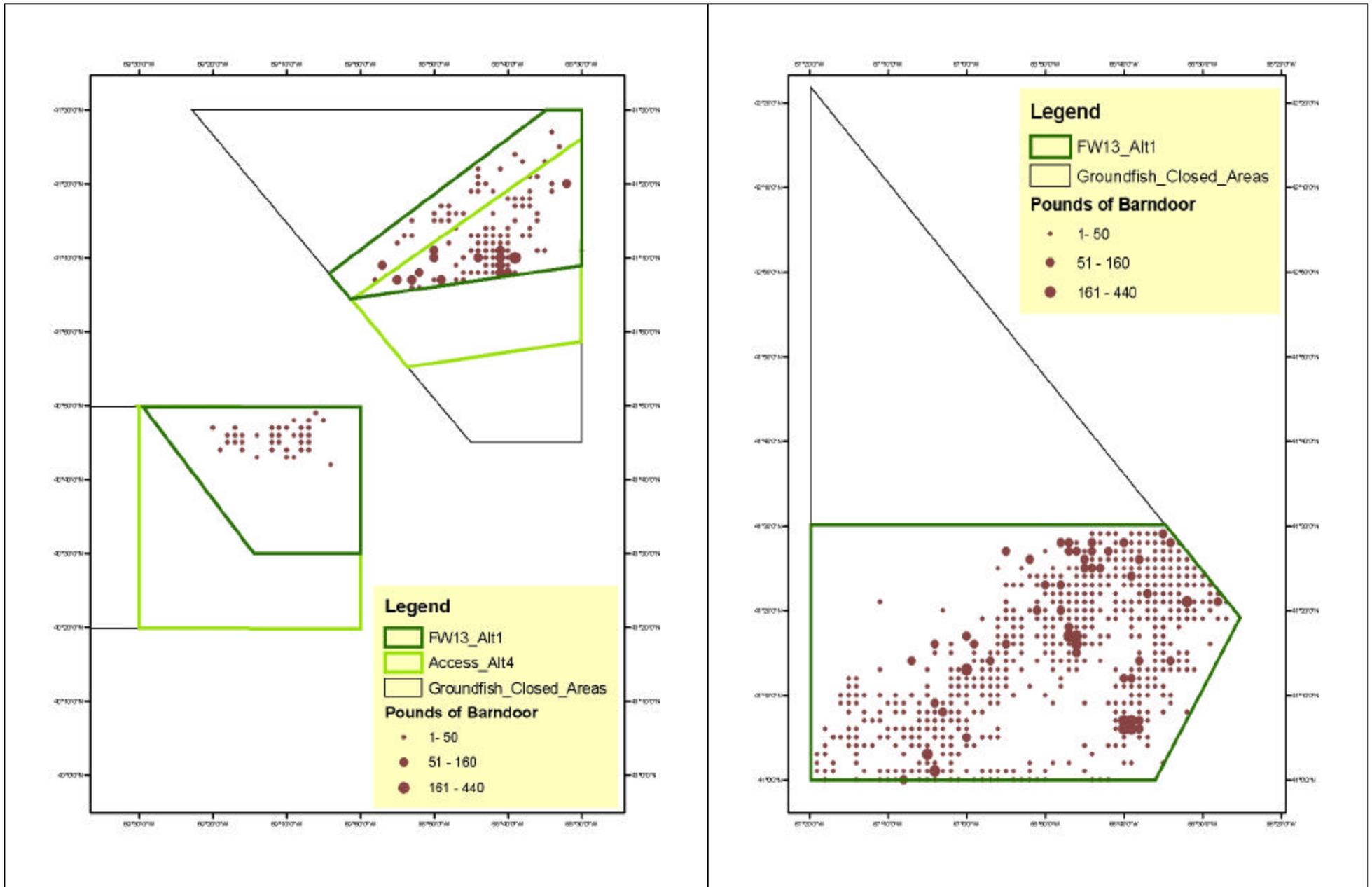
Table 150 – Number and percent of total trips taken in each access area during the 2000 scallop access program.

Access Area	Number and percent of total trips taken in each access area in 2000
Nantucket Lightship	51 (22%)
Closed Area I	107 (45%)
Closed Area II	78 (33%)
TOTAL	236

Section 6.2.5.1.1.4 assesses the observed and projected bycatch of the proposed access program as well as the other access alternatives under consideration (based on 2000 observer data extrapolated out for the entire fishery), neither of which are plotted spatially. The amount of observed barndoor skate caught as bycatch is summarized in Table 111 to Table 113. Overall, the amount of observed barndoor skate bycatch in Closed Area I was relatively small. However, the amount of observed barndoor skate bycatch in Closed Area II and Nantucket Lightship was considerably higher, in terms of the amount of barndoor skate caught per pound of scallop meat landed.

Referring back to the barndoor catch from the NMFS Autumn survey, Table 151 summarizes the barndoor skate catch from the NMFS Autumn survey from 1963 - 2003. In general, after 1965, the amount of barndoor skate catch in the Autumn survey declined steadily until total absence was recorded in 1974. From 1973 to 1992, the Autumn survey catches remained at or near zero until a slight increase was observed from 1993 to 1998 (Figure 28). The index generally increased between 1999 – 2002 and all indices since 2000 are the highest since the 1960s. The three-year moving average is a measure used to determine whether barndoor skates are overfished, above the threshold, or at their target biomass level, and also because it smoothes out annual variability and more clearly shows the long-term trend. It is important to note that barndoor skate biomass continued to increase both during and after the previous scallop access programs in 1999 and 2000. Therefore, the proposed access program in this framework action is not expected to curtail the recovery of barndoor skate, or have negative impacts on barndoor skate mortality.

⁶⁴ This value can be used as a proxy for the total number of observed tows in the access program within each area because it can be assumed that every observed tow kept at least one lb. of scallops. Any observed tow that did not catch or retain at least one lb. of scallops is not included in the total.



Map 27 – Location of observed tows with positive barndoor skate bycatch during the 2000 scallop access program. Note that station locations have been rounded and some tows overlap. *Source: NMFS Observer Database*

Table 151 – Number and weight of barndoor skate from the NMFS Autumn trawl survey (1963-2003), as well as the stratified weight per tow and three-year average biomass index

Year	Total number of tows	Tows with barndoor skate	Percent	Total number	Total catch (kg)	Average fish weight (kg)	Stratified mean weight (kg/tow)	3 year moving average
1963	183	139	76%	139	495.1	3.56	2.63	
1964	183	70	38%	70	200	2.86	1.21	
1965	193	104	54%	104	278.4	2.68	1.82	1.89
1966	194	71	37%	71	154.7	2.18	0.81	1.28
1967	271	17	6%	17	65.7	3.86	0.44	1.02
1968	275	29	11%	29	61	2.10	0.28	0.51
1969	276	13	5%	13	49.8	3.83	0.05	0.26
1970	303	4	1%	4	33.6	8.40	0.07	0.13
1971	310	20	6%	20	41.8	2.09	0.17	0.10
1972	646	3	0%	3	20.8	6.93	0.10	0.11
1973	451	4	1%	4	4.1	1.03	0.00	0.09
1974	379	0	0%	0	0	-	0.00	0.03
1975	406	2	0%	2	3.2	1.60	0.02	0.01
1976	340	10	3%	10	9	0.90	0.05	0.02
1977	419	0	0%	0	0	-	0.00	0.02
1978	556	0	0%	0	0	-	0.00	0.02
1979	588	1	0%	1	3	3.00	0.01	0.00
1980	420	0	0%	0	0	-	0.00	0.00
1981	416	0	0%	0	0	-	0.00	0.00
1982	411	0	0%	0	0	-	0.00	0.00
1983	407	0	0%	0	0	-	0.00	0.00
1984	339	2	1%	2	5.8	2.90	0.01	0.00
1985	340	1	0%	1	2.3	2.30	0.00	0.00
1986	352	3	1%	3	7.2	2.40	0.03	0.01
1987	316	2	1%	2	2.4	1.20	0.01	0.01
1988	307	2	1%	2	3	1.50	0.01	0.02
1989	321	1	0%	1	2.1	2.10	0.00	0.01
1990	332	3	1%	3	8.3	2.77	0.03	0.01
1991	328	5	2%	5	8.4	1.68	0.03	0.02
1992	324	2	1%	2	1.1	0.55	0.00	0.02
1993	325	6	2%	6	29.8	4.97	0.14	0.06
1994	331	9	3%	9	8.2	0.91	0.03	0.06
1995	326	10	3%	10	26.5	2.65	0.11	0.09
1996	320	5	2%	5	10	2.00	0.04	0.06
1997	327	5	2%	5	22.5	4.50	0.10	0.08
1998	332	5	2%	5	17	3.40	0.09	0.08
1999	339	15	4%	15	51.3	3.42	0.30	0.16
2000	329	15	5%	15	69.4	4.63	0.29	0.23
2001	330	34	10%	34	126.5	3.72	0.54	0.38
2002	321	60	19%	60	193.8	3.23	0.78	0.54
2003	322	55	17%	55	134.8	2.45	0.55	0.62
Total	14188	727	5%	727	2150.6	2.96	0.26	0.20

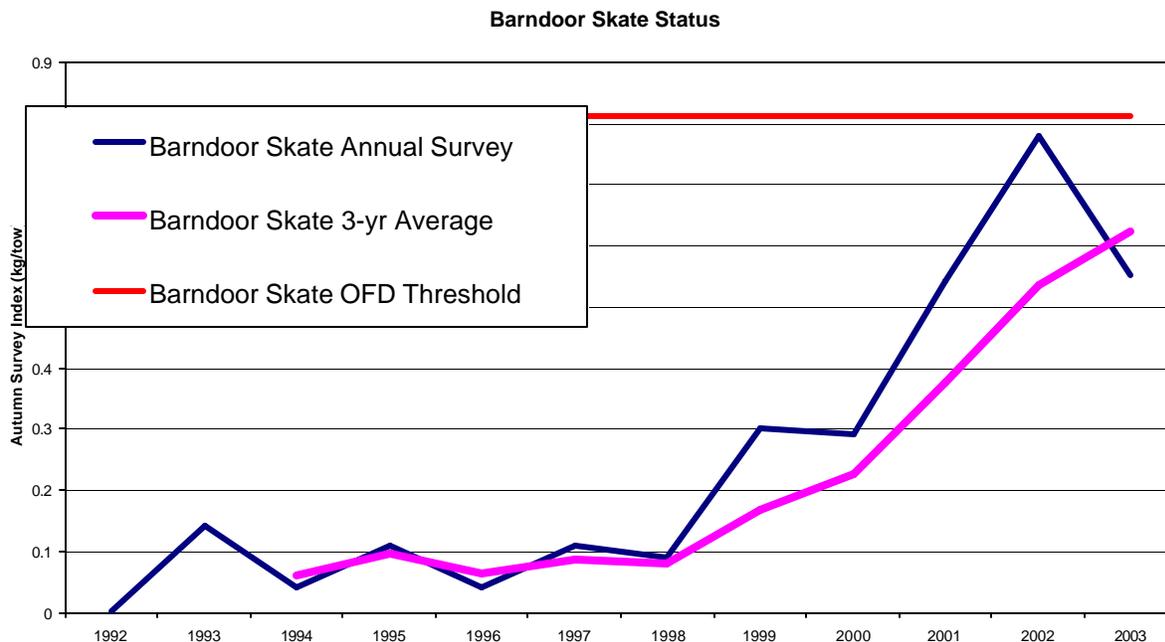


Figure 28 – Status of Barndoor skate based on NMFS Autumn trawl survey from 1992 to 2003.

This analysis could suggest that even if barndoor bycatch levels are high in the access areas, mortality of barndoor skates may not be. The actual discard mortality rate of barndoor skates caught as bycatch in the scallop fishery is unknown. Qualitative information from one individual who has observed scallop trips in and outside the access areas has inferred that barndoor skate discard mortality in the scallop fishery is probably relatively low. Barndoor skates observed on deck appear robust; they do not behave like bony fish and their condition is generally quite good when they are returned to the water (Dvora Hart, NEFSC Population Dynamics Office, pers. comm). However, more research is needed to assess the actual mortality rates of skate bycatch after release.

One aspect of the proposed access program that may help reduce high bycatch levels of barndoor skate is the yellowtail flounder bycatch TAC. When the yellowtail bycatch TAC is reached for an area, that access area is closed. There are not enough data available to develop a consistent and reliable ratio of yellowtail flounder to barndoor skate bycatch levels, but it is worth noting that the TAC exists and may prevent high levels of barndoor bycatch. Furthermore, there is a limit on the total number of trips each vessel can use in each access area. For example, as proposed under this action for fishing year 2004, each limited access vessel is permitted only one trip in the Nantucket Lightship access area and two trips into the Closed Area II access area. This direct limit on effort in the access areas, plus the yellowtail flounder bycatch TAC may restrict catches of barndoor within the access areas.

7.1.4.3 Assessment of impacts on skate mortality from an increase in total allocated limited access scallop DAY-AT-SEA

The regulations for the Skate FMP state that a baseline review must occur if Scallop DAS measures are made less restrictive, according to section 648.53 of the regulations. The baseline Scallop DAS assessed in the Skate FMP were 120 DAS for full-time vessels, 48 DAS for part-time vessels, and 10 DAS for occasional vessels. This framework proposes to allocate higher DAS for each limited access

vessel category for fishing year 2004; thereafter DAS allocations would be reduced to levels below the DAS allocations assessed in the skate mortality baseline.

Since implementation of the Skate FMP, scallop management has changed significantly, and allocated DAS do not mean the same thing as they did prior to Amendment 10. Amendment 10 implements rotational area management and allocates specific numbers of DAS to vessels that can only be used inside rotational access areas, and a separate number of DAS to use outside identified access areas. Prior to Amendment 10, allocated DAS could be used in any area, and fishermen were not obligated to use days in certain areas. For example, the Skate FMP assessed the baseline of effort for full-time limited access vessels to be 120 DAS per year per vessel. At that time, those days could be fished anywhere that was open to scallop fishing. Under previous scallop actions, there were specific costs associated with entering an access area. When a vessel entered an access area, there was a scallop trip limit and vessels were charged an automatic minimum number of DAS, whether or not they fished all those days. For example, in fishing year 2000, full-time limited access vessels were charged a minimum of 10 DAS for each trip to an access area within the groundfish mortality closed areas, with a trip limit of 10,000 lbs. of scallop meats. Since there was no trip limit restriction or DAS tradeoff charge for trips in outside areas, many vessels opted to use their DAS in outside areas instead of participating in the access program. However, under the rotational area management strategy implemented under Amendment 10 and this framework action, a certain number of DAS are available to vessels only if they participate in an access program and vessels are charged a minimum number of DAS for each trip to access these areas. Therefore, more DAS are allocated to account for the DAS tradeoff and trip limit restrictions.

For fishing year 2004, full-time limited access vessels are proposed to receive 42 DAS to fish anywhere they like in open areas, 48 DAS to be used exclusively if they fish in the Hudson Canyon Area, and 36 DAS to be used exclusively if they fish in the proposed access areas within the groundfish mortality closed areas. These three DAS allocations for full-time vessels totals 126 DAS, six more days than the 120 DAS assessed in the skate mortality baseline. However, if they choose not to participate in one or more of the access areas, then they forfeit that entire amount of DAS, which would not be available to use in other areas, as would have been the case under previous scallop actions. In fishing year 2005, the total DAS allocation for full time vessels is proposed to reduce to 100 DAS, 20 DAS less than the level used in the skate baseline assessment. Table 152 describes the proposed DAS allocations for all three limited access vessel categories. The DAS allocations for FY2004 are slightly higher than the baseline for all three vessel categories, but after 2004, all three are reduced to levels significantly below the baseline.

Table 152 – Allocated DAS for all three limited access scallop vessel categories, as well as projected DAS allocations for fishing years 2004–2007 under the proposed framework. **Projected values. Shaded row indicates the year that the Skate FMP used to define the baseline for Scallop DAS.*

Year	Full-time	Part-time	Occasional
1999	142	57	12
2000	120	48	10
2001	120	48	10
2002	120	48	10
2003	120	48	10
2004*	126*	50*	10*
2005*	100*	40*	8*
2006*	91*	36*	8*
2007*	91*	36*	8*

The Skate FMP requires a baseline review if more than 34,000 limited access DAS are allocated to the entire limited access scallop fleet. Allocated DAS in the scallop fishery have varied over time, but have increased each year since FY2000. Table 153 describes the total allocated DAS for the limited access fleet, as well as the total number of DAS used by the fleet. From 2000 through 2003, the fleet has used around 85% of allocated DAS. However, based on changes in how the allocated DAS may be used by the fleet, it is projected that the fleet will use only 66% of allocated DAS for 2004 (about 24,130 days); thereafter, the number of allocated DAS is expected to decline and the percent of DAS used is projected to return to over 80%. Therefore, the framework expects that allocated DAS will increase above the baseline level of 34,000 for the entire limited access fleet, but used DAS will decline to levels below what the fleet has used in 1999 through 2003. The expected reduction in DAS used in 2004 is primarily due to the DAS tradeoff restriction. Because vessels will be charged more days to fish in access areas, the number of used DAS will decline significantly. Figure 29 displays the total allocated and used DAS for the entire limited access scallop fleet in recent years, and projected values through fishing year 2007. According to this figure, DAS usage is always below allocated DAS, especially in fishing year 2004. Long term, under rotational area management, total allocated DAS is expected to be around 27,000 DAS, significantly less than 34,000 assessed in the skate baseline for scallop DAS restrictions. DAS used is also projected to remain significantly below the level used in the 2002 fishing year (the baseline year).

Table 153 –Scallop DAS Allocated and DAS used for fishing years 1999 through 2003, and projected DAS allocated and used for 2004 through 2007. **Projected values. Shaded row indicates the year that the Skate FMP used to define the baseline for Scallop DAS.*

Year	DAS allocated	DAS used	Percent of DAS Allocated
1999	33,910	23,074	68%
2000	30,752	24,958	81%
2001	32,264	28,198	87%
2002	34,078	30,065	88%
2003	35,044	30,082	86%
2004*	36,796*	24,130*	66%
2005*	29,203*	23,352*	80%
2006*	26,575*	21,712*	82%
2007*	26,575*	23,007*	87%

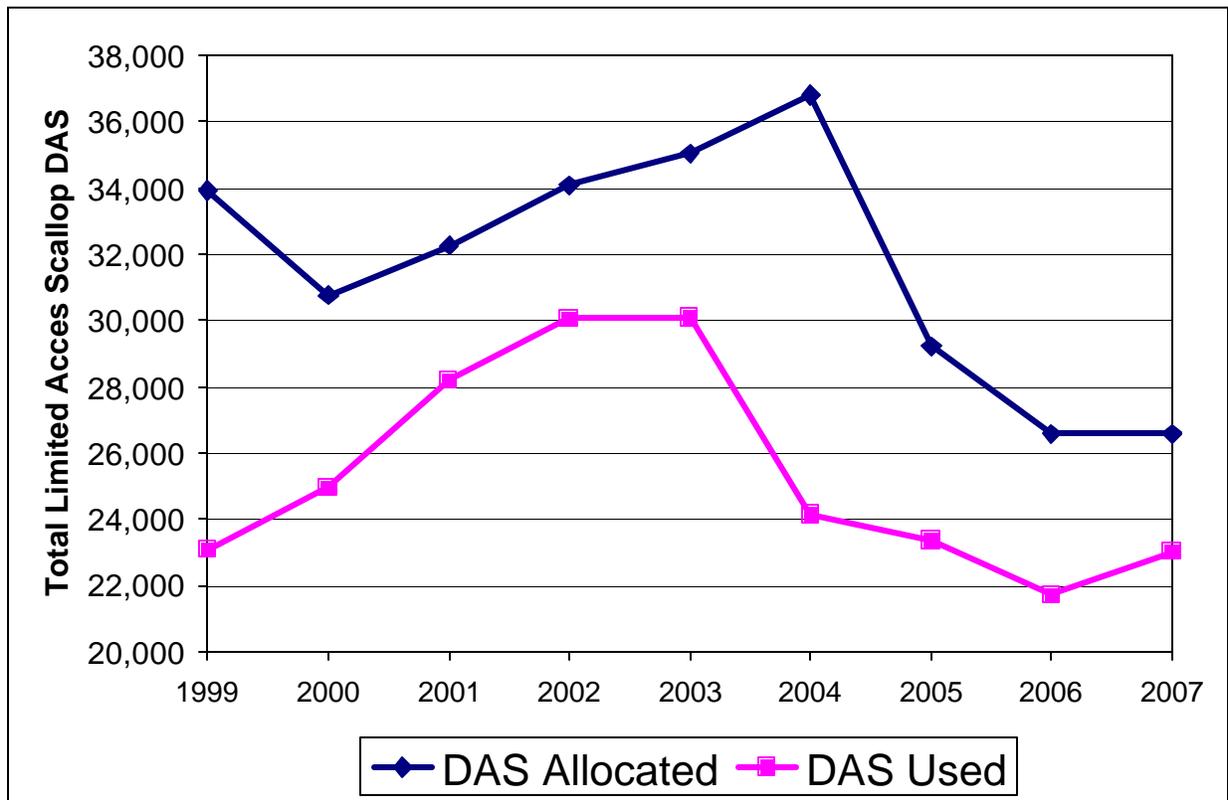


Figure 29 – Total DAS Allocated and DAS Used for the Limited Access Scallop Fleet for fishing years 1999 through 2003, and projected values for 2004 through 2007.

As described earlier, under this action, full-time limited access vessels will be allocated 42 DAS to be used in open areas, 48 DAS to be used exclusively in the Hudson Canyon Area, and 36 DAS to be used exclusively in the proposed access areas within the groundfish mortality closed areas. These three DAS allocations for full-time vessels total 126 DAS, six more days than the 120 DAS assessed in the skate mortality baseline. The increase in total allocated DAS in the scallop limited access fleet, and

concluded that this increase will not have negative impacts on barndoor or thorny skate mortality because DAS are allocated differently than they used to be. Since vessels will be restricted to use a certain number of total allocated days in specific areas, effort will shift and vessels will be charged more DAS than the vessel currently uses to harvest scallops. For example, under this action, full-time limited access vessels are granted 48 DAS per vessel to be used exclusively in the Hudson Canyon area. Therefore, about 38% of the total allocated DAS can only be used in the Hudson Canyon area, where neither barndoor nor thorny skates are distributed. This measure will ensure that at least 38% of total full-time scallop effort will be limited to areas where barndoor and thorny skates will not be impacted by scallop fishing. Furthermore, according to the analysis in Section 7.1.4.1, only about 0.5% of thorny skate distribution and 7% of barndoor skate distribution are found within the proposed access areas within the groundfish mortality closed areas, according to the more recent NMFS Autumn trawl survey (1997-2003). Since 36 DAS out of a total 126 allocated will be focused in these access areas, about 29% of the total effort will be in areas that are not as concentrated with barndoor and thorny skates, as compared to some areas outside the access areas, like the Great South Channel and the southern edge of Georges Bank. The slight increase in DAS for fishing year 2004 will not have negative impacts on skate mortality, because the majority of scallop effort will be focused in areas with lower skate distribution, and total DAS allocations will only be higher than what was assessed in the skate baseline for one fishing year, then total allocated DAS are expected to reduce to levels well below 34,000 (Table 153).

Other measures proposed in this framework that will reduce the actual number of days a vessel can fish. For example, the framework proposes a 18,000 lb. scallop possession limit for all trips taken in the access areas (Hudson Canyon and groundfish mortality closed areas on Georges Bank). It is projected that a full-time vessel will harvest that amount in about 6-8 days; versus the 12 DAS they will be charged to access the area. Therefore, the 36 DAS allocated to each full-time vessel to access the groundfish mortality closed areas will actually be fished only about 24 DAS, due to the scallop possession limit (Section 6.2.11.1.3). In addition, scallop biomass is greater than it has been in recent years, so the actual amount of time a vessel spends fishing with gear on the bottom is greatly reduced under the proposed access program (see Section 6.1.1.2 for details about reductions in bottom contact time under the proposed action). This will also reduce the amount of time that scallop gear can impact skate mortality. There are several other measures identified in the Skate FMP that were not one of the seven management categories identified as baseline measures, but were recognized as other management measures in the scallop fishery that could have positive impacts on skate mortality. For example, in Section 4.16.3.3 of the Skate FMP, the requirement for eight inch mesh twine top for gear used in the access areas (as compared to six-inch twine top used in open areas) was identified as a measure that would improve skate escapement. Under this framework action, the mesh size requirement would be increased to ten inches in all areas (both access and outside areas). This gear requirement in all areas may improve the escapement of juvenile skates, and help compensate for the slight increase in total allocated DAS.

7.1.4.4 Conclusions

This action is not expected to have negative impacts on either barndoor or thorny skate mortality, as compared to the baseline defined in the Skate FMP. Thus, the cumulative effect of this framework is an overall reduction in allocated DAS well below the baseline level established in the Skate FMP. In fact, this framework action will have very little, if any, impact on thorny skate mortality because the primary objective of the access program is to concentrate scallop effort in the access areas on Georges Bank, which are on the periphery of thorny skate distribution. Furthermore, thorny skate distribution in open areas rarely overlaps with the distribution of scallop fishing effort in open areas (Map 28). The updated survey values for thorny skate are important to monitor, since that stock does not seem to be recovering. It is expected that reductions in overall multispecies DAS and shifts in scallop fishing into access areas will have positive impacts on thorny skate mortality.

In terms of barndoor skate, there is greater overlap of scallop effort and barndoor skate distribution (Map 28). However, there is a significant portion of barndoor skates contained within the habitat closed areas and groundfish mortality closed areas that are not proposed as access areas. These areas will remain closed indefinitely, therefore the barndoor skates that live in these areas will benefit. The primary justification for inferring that the proposed scallop access program would not substantially increase barndoor skate mortality is that the recovery trend of the species has continued, even accelerated, during and after the last access programs. Barndoor biomass has increased steadily since 1998 despite the two scallop access programs (in 1999 and 2000). Another reason that barndoor skate mortality is not expected to increase as a result of this action is the qualitative information about the viability of barndoor skates when they are released into the water; it has been inferred by some that barndoor skate bycatch mortality may be low. Even though barndoor skates are known to live within the access areas (Map 24), and were caught as bycatch according to the 2000 observer database from the previous scallop access program (Map 27), the Skate PDT concludes that overall barndoor skate mortality will not increase substantially as a result of this action, based on the assessment described in this section. Therefore, no additional measures are required to minimize impacts of this action on skate mortality.

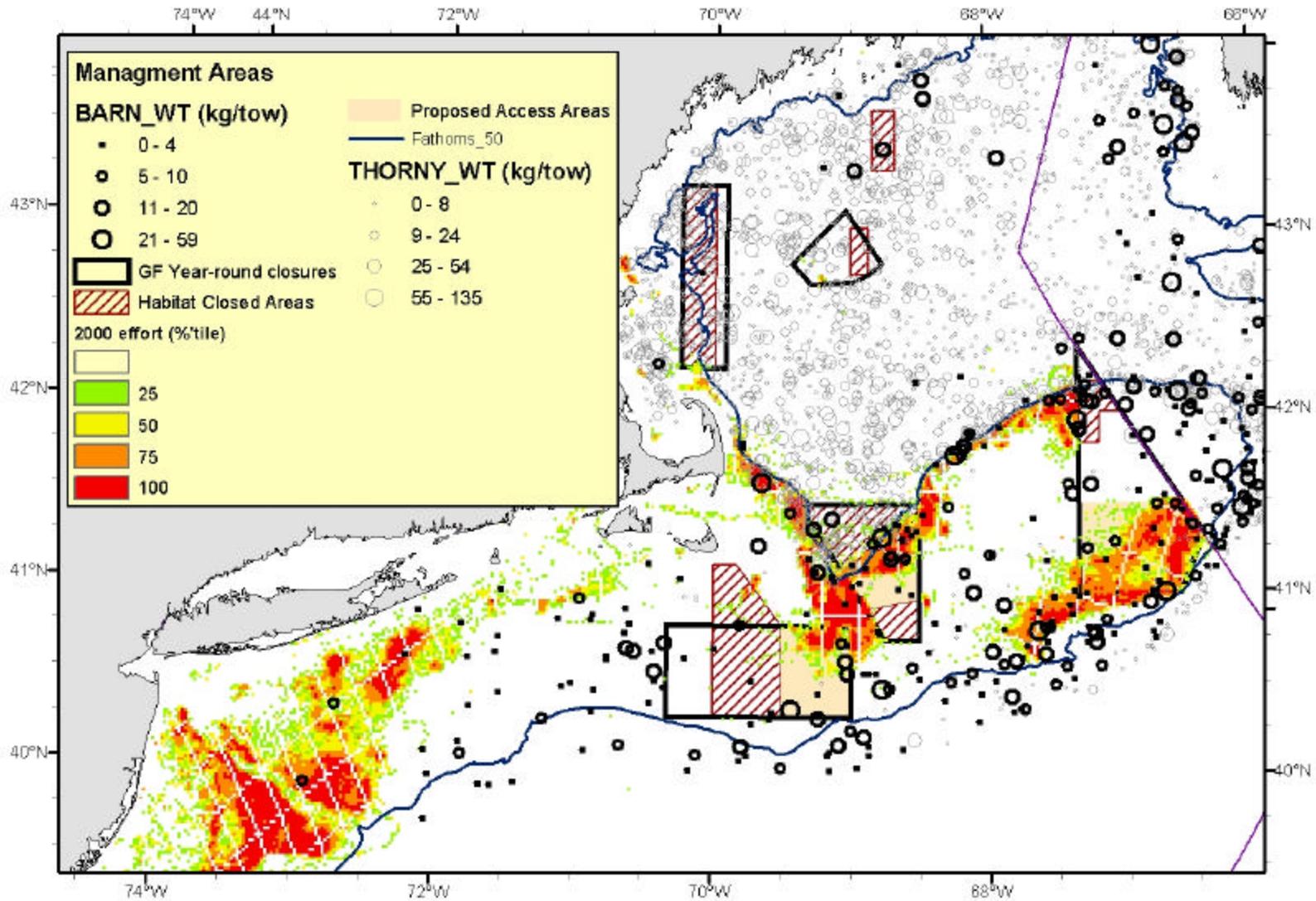
Furthermore, the increase in total allocated DAS in FY2004 will not impact skate mortality, because the increased level is for one year only, and then total allocated DAS will drop well below the level identified in the skate baseline review process. Furthermore, allocated DAS have a different meaning than they did as assessed under the Skate FMP. Prior to this action, a vessel could use its DAS anywhere it chose; however, now a vessel is restricted to use a certain number of days in each access area. This shift in effort is expected to reduce overall effort in open areas, and concentrate scallop fishing in access areas with higher scallop catch rates. The current access areas in Hudson Canyon and Georges Bank do not contain a significant portion of either barndoor or thorny skates, according to the distribution data from the NMFS Autumn survey from 1963 through 2003.

Recommendations

The Skate PDT recommends additional data collection and research that would improve the assessment of skate mortality from bycatch and the impacts of fishing:

- The Skate PDT recommends that a discard mortality study (for example, a skate tagging program) should be initiated as soon as possible to determine the actual discard mortality rates of barndoor and other skate species released as bycatch. Until this information becomes available, it will remain very difficult to predict skate mortality rates from bycatch and the actual impacts this type of access program is likely to have on skate rebuilding.
- Recognizing that the design, development, and implementation of a discard mortality study is a long-term project, the Skate PDT also recommends that observers collect additional information regarding skate bycatch in the scallop access program fishery. The Skate PDT requests that NMFS provide special instructions to the observers on this access program. Specifically, the Skate PDT is requesting that observers be trained to identify all skate species accurately, and, in addition to the number of skates caught, the number and viability (or condition) of skates released as bycatch should be documented.

The Skate PDT also recommends that because scallop management has changed substantially under rotational area management, it may be necessary to re-assess the skate baseline for Scallop DAS restrictions. DAS have a very different meaning under this new management strategy and the baseline assessment may need to be adjusted to account for this change.



Map 28 – Distribution of barndoor (in black) and thorny (in gray) skate overlapped with scallop effort from 2000 VMS data. *Darker areas represent more intense fishing effort.*

7.2 NEPA

In accordance with the National Environmental Policy Act as amended (NEPA), the Council has prepared an Environmental Assessment (EA) to determine whether further analysis and an Environmental Impact Statement (EIS) are needed. The EA has estimated the degree of impacts (short-term and cumulative) on the human environment, and the results justify a "Finding of No Significant Impact" (FONSI). Impact estimates are compared to the "No-Action." In the context of the current situation, these are the regulations that would be in place during 2004 if no action were taken to change them. Thus, No-Action is essentially the regulations that Amendment 10 specified and anticipated for 2004.

The SEIS for Amendment 10 analyzed the cumulative impact of scallop management since Framework 14 and projections of the impacts beyond 2004. The No-Action alternative in this document is the continuation of the current measures that are presently in place.

The Council has determined through an Environmental Assessment that preparing an EIS at this time is unnecessary to justify actions in this document, as noted in the FONSI. Several factors for the final action in Framework Adjustment 16 (this document) support this conclusion, including:

The management adjustments are temporary; thus, they have a limited cumulative impact. The scope of management adjustments is very limited, focusing only on area access for portions of the Georges Bank closed areas and on a day-at-sea adjustment to achieve the Amendment 10 mortality target and continue the current area access program for the Hudson Canyon and VA/NC Areas.

Further rationale for the Finding of No Significant Impact is given below.

7.2.1 Consideration of NAO 216-6 Significance Criteria

In addition, National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 (revised May 20, 1999) provides nine criteria for determining the significance of the impacts of a final fishery management action. These criteria are discussed below:

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

The final action is designed to enhance the long-term sustainability of the target species, i.e. sea scallops. Although the overall scallop biomass is not substantially higher with access to the groundfish closed areas, the scallop biomass in the open fishing areas is expected to be substantially higher than with the No Action alternative (see Section 6.1.1.1). Although neither the final action nor the No Action alternative is expected to jeopardize the sustainability of sea scallops, more adult biomass would be located in the open fishing areas if the access program allows for a reduction in open-area DAS allocations, as proposed. This would make rotation area management more effective (see Section 6.3.7.1.3), increase the size of scallops that would be caught in open areas, and reduce fishing time (which in turn reduces fishing costs and reduces non-catch scallop mortality).

Within the groundfish closed areas, for which access is proposed for portions of these areas, scallop biomass is expected to decline in the access areas from nearly an unfished condition that consists of mainly large, old scallops. In the remaining parts of the groundfish areas for which access is not proposed or for parts that would be classified as an EFH closed area, scallop biomass is expected to continue increasing (see Section 6.1.1.1), particularly in the highly productive scallop resource area in

the northern part of Closed Area II and in the remaining portions of Closed Area I. Even in the access areas, the time-averaged fishing mortality rate for the proposed mechanical rotation schedule is $F=0.133$. This value is 67% of the sustainable fishing mortality rate that maximizes yield-per-recruit.

Thus, the proposed access program combined with the associated open-area DAS allocations to achieve a resource-wide fishing mortality target of $F=0.2$, is not expected to jeopardize the sustainability of the scallops in the proposed access areas or for the scallop resource as a whole. In fact, the final action is expected to enhance the viability and sustainability of the scallop resource in other open scallop fishing areas, particularly when the cumulative effect of area rotation is considered (see Section 6.3.7.1.3).

2. *Can the final action be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Act and identified in FMPs?*

The final action includes adjustments to the EFH closed area boundaries in the Scallop FMP to be consistent with the EFH closed areas adopted in the Multispecies FMP to protect complex and sensitive habitat. This action improves the practicability of the EFH closed areas, making them more effective in protecting important ocean habitats that are classified as EFH (see Section 6.1.2).

Also important is the effect of the final action on ocean habitats and EFH in open fishing areas. As a result of the cumulative effect of the final action on fishing time in the open areas, the impacts on habitat in the open areas is expected to decline. It is difficult to quantify the effects, but the analysis in the Amendment 10 FSEIS shows the distribution of fishing effort (determined from VMS position data) relative to bottom type. With access, the amount of fishing time and bottom contact is expected to substantially decline (see Section 6.1.1.2) and this may be particularly important in the Great South Channel, a heavily fished area running southeast of Cape Cod, MA and between Closed Area I and the Nantucket Lightship Area (see Map 20). The Amendment 10 FSEIS showed that this area contains some sensitive hard-bottom habitat and the analysis of this action suggests that nearly 50% of the scallop fishing effort in the open Georges Bank areas is found here and will see a reduction in fishing activity.

On the other hand, impacts on habitats and EFH in the proposed access areas will obviously increase. Much of the proposed access areas had been fished with scallop dredges in 1999 (Closed Area II only) and in 2000 (all three areas), so the impacts are not expected to be substantial or significant. The final action will allow some additional parts of the Nantucket Lightship Area and Closed Area I to be fished, however. It is important to understand that the total amount of fishing time is expected to be very low, due to the high scallop catch rates and limits on daily shucking capacity from the crew restriction. The impacts from the new access areas and the overall effects of the program are analyzed and discussed in Section 6.2.3.2 and indicate that the protection of EFH by the proposed EFH closed area adjustments is at least equal to the amount of EFH where new access is proposed.

Thus the final action is expected to reduce damage to ocean habitats by allowing access in areas with less-sensitive habitats, keeping total fishing time in the access areas to a minimum,

while reducing bottom contact in other open areas some of which also have sensitive habitats that could benefit from reductions in fishing intensity.

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

Since the management measures in the Atlantic Sea Scallop and the Northeast Multispecies FMPs provide flexibility and continuous opportunity to fish within the constraints of the conservation needs of the plans, the Council expects that the proposed measures will not negatively impact safety. The measures do not require vessels to take risks that compromise safety of the vessel and crew.

The proposed action includes measures that specifically avoid creating an incentive to fish as quickly as possible and/or deck-load sea scallops while fishing in the re-opened closed area. Since a closed area trip will automatically accumulate 12 days-at-sea, no matter how long it takes to catch the scallops, vessels can fish more rationally without cost. Under average conditions, a vessel is expected to catch the scallop possession limit in four to five days. With a three-day steam time to and from port, the expected total trip length is seven to eight days. The proposed action will therefore allow vessels the opportunity to fish in locations within the controlled access areas where there might be fewer scallops but much less bycatch, to fish with fewer crewmembers (taking longer to shuck scallops prior to leaving the closed areas), or take other steps that might improve public health and crew safety.

The proposed action could also decrease the incentive to fish in poor weather conditions. The proposed season would allow the opportunity to fish the allocation of the three closed area trips during June 15 to January 31, providing sufficient opportunities to fish when weather is favorable. All areas open in a year would be open at the same time (subject to potential closure from yellowtail flounder catches reaching the TACs), giving scallop fishing vessels maximum flexibility to determine where to fish in the face of existing conditions that might affect health and safety. Another important management measure that will have a positive effect on public health and safety is a revised broken trip procedure (subject to approval of Amendment 10 presently under review). This new procedure is intended and designed to make it easier for a vessel captain to end a trip early if conditions warrant such an action. Instead of potentially losing all DAS associated with that trip, Amendment 10 would allow vessels to get a substantial 'refund' of DAS based on their actual landings from the broken trip. These effects are especially important for smaller or less seaworthy vessels to participate in the closed area scallop fishery without danger from hurricanes and nor'easters.

Although the industry expressed health and safety concerns about the length of the proposed access season, the 7 ½ month season should provide ample opportunity to fish for the 24 days (more or less) that it would take for vessels to fish three trips with an 18,000 lb. scallop possession limit. The program also allows the crew to work at a slower, more deliberate pace because the vessel would be charged 12 DAS; no matter how long the trip actually takes. These factors, combined with the new broken trip 'rebate' procedure for controlled access trips will prevent a substantial adverse impact on public health and safety.

4. *Can the final action be reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat of these species?*

Sea turtle occurrences in the proposed access areas are rare and the associated additional effort to fish in the access areas is unlikely to increase adverse impacts. The final action, on the other hand, is expected to reduce fishing effort in areas where scallop fishing and sea turtle distributions overlap, in

the Mid-Atlantic region. It is possible that some of the controlled access effort allocations could be transferred to these areas, if the proposed access areas close early when yellowtail flounder catches reach the TACs. This effort, however, cannot be any greater than that anticipated under the No Action alternative and would therefore be unlikely to have an adverse effect.

The final action is therefore not expected to have an adverse impact on sea turtles, which have been caught by scallop fishing gear. The Biological Opinion prepared for Amendment 10 to the Scallop FMP found that the scallop management program is not likely to jeopardize the continued existence of endangered and threatened species. This action is expected to cause total scallop fishing effort to decline, particularly in areas that overlap sea turtle high use areas. Moreover, the agency is continuing to monitor and evaluate the situation, as well as conduct sea trials using experimental fishing gear that has the potential to reduce interactions with endangered and threatened sea turtles. No effects on marine mammals or critical habitat of protected species have been documented.

The effects on barndoor skate (*Raja laevis*), a species once considered for listing, are assessed in Section 7.1.4.1. Since 1998, barndoor skate abundance, measured by the annual trawl resource survey has been increasing and there is no evidence that the 1999 and 2000 access programs had an adverse effect on the overall abundance of barndoor skate. Furthermore barndoor skate is found in other parts of the Georges Bank region that overlap the distribution of scallops and intense scallop fishing effort. These areas are expected to experience less fishing effort (bottom contact) as a result of the cumulative effect of access and increases in scallop biomass in the open areas from lower fishing mortality. Based on the Skate Baseline Review, this proposed action is not expected to have significant impacts on either barndoor or thorny skate mortality as compared to the baseline defined in the Skate FMP.

5. *Can the final action be reasonably expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?*

The cumulative effects of the final action on target and non-target species are described in Sections 6.3.7.1 and 6.3.7.3, respectively. These effects are expected to be positive, reducing scallop mortality and increasing biomass in open fishing areas, as well as reducing bottom contact time, which is related to adverse impacts on bycatch and EFH. The proposed measures in the final action furthermore limit the adverse impacts on groundfish mortality and expected rebuilding under Multispecies Amendment 13 regulations. Some increase in adverse effects on habitat in unfished areas (since December 1994) are anticipated, but these effects are expected to be offset by reductions in adverse effects elsewhere.

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

Due to catch limits and other measures to minimize bycatch and bycatch mortality, the final action is not expected to jeopardize the sustainability of non-target species. In fact, increases in fishing mortality from the proposed access program are expected to be offset or have beneficial effects for many species, except for those that are more concentrated in the proposed access areas during the times when they are open to scallop fishing. These impacts are analyzed and discussed in Sections 6.1.1.2 and 6.1.1.3.

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

The final action is not expected to have a substantial impact on biodiversity and ecosystem function, because the intent of the action is to maximize sustainable yield by allowing restricted access to areas with a large biomass of older scallops, while reducing mortality in other areas and reducing overall impacts on habitat and bycatch. The analysis in Section 6.1.2 shows that the overall effects on these two important components of biodiversity and ecosystem function are expected to be no worse than that under the No Action alternative and are likely to be reduced by the final action.

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

There are no significant natural or physical environmental effects, so interrelations with significant social or economic impacts are moot.

9. *To what degree are the effects on the quality of the human environment expected to be highly controversial?*

Access to the proposed areas will help to reverse the highly controversial effects of closing the groundfish areas to the scallop fleet. Overall, the final action allows access to more of the scallop resource, which should reduce the controversy that currently exists. The cumulative effect of the groundfish and EFH closed areas with the scallop fishing mortality target causes the FMP to allocate more effort in the open fishing areas that produces maximum sustainable yield under average conditions⁶⁵.

The final action will also allow fishing in the areas that were closed to scallop dredges which have had in certain situations a substantial amount of groundfish catches when scallop fishing. These area closures provided for groundfish mortality reduction and improved rebuilding for overfished groundfish stocks. Over the past decade, the Scallop FMP has reduced to a great degree the amount of groundfish bycatch and the proposed access is for areas and seasons when groundfish catches are expected to be relatively low, compared to the scallop catches. The final action, furthermore, includes several measures to limit groundfish catches to levels that are not expected to meaningfully increase groundfish mortality or affect the potential for rebuilding overfished stocks (see Section 6.1.1.2). Also, the management measures are designed to limit their impact on potential special access programs developed under the Multispecies FMP for limited access to use “B” class DAS allocations, which would otherwise be a controversial effect.

Lastly, the final action would allow scallop fishing in areas within Closed Area I and the Nantucket Lightship Area that have not seen scallop fishing since 1994. Using updated information about bottom substrates and habitat, the EA takes a hard look at this effect and found that the added protection in the EFH closed areas adopted in Amendment 13 to the Multispecies FMP at least equals the protection that was expected with the EFH closed areas in Amendment 10 to the Scallop FMP. This result coupled with the improved practicability of making the EFH closed area boundaries

⁶⁵ The scallop resource in the Mid-Atlantic region has been unusually productive, allowing the FMP to sustain the current effort levels over the past several years. The Framework 16 analysis suggests that recruitment continues to be well above average and can support the effort allocations in Amendment 10 with and without access to the Georges Bank closed areas.

consistent in both FMPs, reduces the controversial nature of this proposed management measure that would allow scallop fishing in new areas of the groundfish closed areas.

Therefore, although some aspects of the final action were highly controversial during scoping, the Council recommends several measures in the final action to reduce the effect of the final action on the human environment, thereby reducing the potential controversiality of the final action.

7.2.2 Finding of No Significant Impact

To determine the significance of the action analyzed in this EA, NMFS is required by NEPA, 40 CFR 1508.27 and NOAA Administrative Order 216-6 Section 6.01b to consider the context and intensity of the proposed action. This determination is based on the following factors from CEQ's implementing regulations at 40 CFR 1508.27:

1. In reaching the conclusion of no significant impacts, it is recognized that there are both beneficial and adverse impacts of this project as discussed in Section 6.0. However, none of the impacts associated with the Proposed Action were significant.
2. This action does not affect public health or safety as discussed in Section 6.1.5.1 and as identified through public and internal scoping.
3. There are no significant effects to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as discussed in Section 6.1.5.2 and as identified through public and internal scoping.
4. The effects on the human environment detailed in Section 6.0 of the EA are non-controversial.
5. There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks as discussed in Section 6.0 of the EA.
6. This action will not establish a precedent for future actions with significant effects, nor does it represent a decision in principle about future considerations.
7. As discussed in Section 6.3, this action will not result in cumulatively significant impacts on the environment.
8. This action will not cause loss or destruction of significant scientific, cultural, or historical resources as detailed in Section 6.1.5.2.
9. As discussed in Sections 6.1.2 and 6.1.3 of the EA, this action will not adversely affect endangered or threatened species or critical habitat.
10. This action does not violate Federal, State or local law or requirements imposed for protection of the environment as detailed in Section 7.0 of the EA.

Based on the EA, review of the National Environmental Policy Act (NEPA) criteria for significant effects, and my knowledge of the predicted impacts, I have determined that the action to be implemented (Section 4.1) would not have a significant effect, individually or cumulatively, upon the quality of the human environment. Therefore, preparation of an EIS on the final action is not required under Section 102(2)(c) of NEPA, its implementing regulations (40 CFR Part 1500-1508), or NOAA/NMFS environmental review procedures (NAO 216-6).

Signature

Date

7.3 Endangered Species Act

Section 7 of the ESA requires Federal agencies conducting, authorizing or funding activities that may affect threatened and endangered species to ensure that the impacts of those activities do not jeopardize the continued existence of listed species. Sections 6.2.1.3 and 6.3.7.5 discusses the impacts of Framework Adjustment 16/39 and the scallop fishery on listed species.

At this writing, the Council concludes that this action may affect, but will not likely jeopardize the continued existence of any threatened and endangered species based on the discussion in this document and on previous NMFS determinations that operation of this fishery and actions similar to those proposed in Framework Adjustment 16/39 have not resulted in a determination of jeopardy. The Council also concludes that this action will neither alter nor modify any designated critical habitat. Should activities under this action change or new information become available that changes the basis for this determination; the Council recognizes that NMFS may reinitiate consultation.

7.4 Marine Mammal Protection Act

The New England Fishery Management Council has reviewed the impacts of Framework Adjustment 16/39 to the Atlantic Sea Scallop Fishery Management Plan on marine mammals and concludes that this management action is consistent with the provisions of the MMPA and will not alter existing measures to protect the species likely to inhabit the management unit. See Sections 6.2.1.3 and 6.3.7.5 for a discussion of these impacts.

7.5 Executive Order 13158 (Marine Protected Areas)

The Executive Order on Marine Protected Areas requires each Federal agency whose actions affect the natural or cultural resources that are protected by an MPA to identify such actions, and, to the extent permitted by law and to the maximum extent practicable, in taking such actions, avoid harm to the natural and cultural resources that are protected by an MPA.

The E.O. directs Federal agencies to refer to the MPAs identified in a list of MPAs that meet the definition of MPA for the purposes of the Order. The E.O. requires that the Departments of Commerce and the Interior jointly publish and maintain such a list of MPAs. As of the date of submission of this FMP, the list of MPA sites has not been developed by the departments. No further guidance related to this Executive Order is available at this time.

7.6 Coastal Zone Management Act

The Council has determined that the final proposed alternatives comply with the rules and regulations of the Coastal Zone Management Act. This document has been sent to coastal states from Maine to North Carolina for review of compliance with individual state's CZMA management regulations.

7.7 Section 515 (Data Quality Act)

Following the procedures described in the Amendment 10 FSEIS, the data and analysis of impacts was prepared as described in the DQA compliance discussion in Amendment 10, utilizing the Council's Scallop, Groundfish, and Habitat technical teams (Plan Development Teams) for development

and review of analyses. New data included in this analysis are 2003 scallop survey data from the R/V Albatross annual scallop dredge survey, the 2003 video survey scallop density analysis provided by Dr. Stokesbury of SMAST and Dr. Rago of the NEFSC, and maps of bottom substrate observations from the 2003 video survey data conducted by SMAST.

7.8 Paperwork Reduction Act

The analysis for Amendment 10 included an estimate and description of the burden (time and cost) of preparing, submitting, and administration of new data collection requirements for the Amendment 10 proposed action. Most if not all of the measures in the proposed action for Framework Adjustment 16/39 are the same as those described and analyzed in Amendment 10. Any new requirements or requirements that would alter the burden hour estimates will be described and evaluated in a new PRA analysis under a separate cover.

7.9 Initial Regulatory Flexibility Act/E.O. 12866

7.9.1 Introduction

This analysis was prepared by the Council in support of the proposed action. 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.”

The main elements of the RFA are fully discussed in several sections of the Framework 16 document, and the relevant sections are identified by reference to this document.

7.9.2 Problem Statement and Objectives

The purpose of the action and need for management (statement of the problem) is described in Section 3.1.

7.9.3 Management Alternatives and Rationale

The proposed action is described in Section 4.1. Alternatives to the proposed action are summarized in Section 4.2. Economic impacts are examined in various subsections of Section 6.2.11.4 and 6.2.

7.9.4 Description of the small business 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 \$3.5 million annually. The vessels in the Atlantic sea scallop fishery could be considered small business entities because all of them grossed less than \$3.5 million according to the dealer’s data for the 2001 and 2002 fishing years (unreported NMFS data). These entities were described in detail in Section 7.1 and Section 8.7.2.4 of Amendment 10 FSEIS. According to this information, annual scallop revenue averaged from about \$615,000 to \$665,600 per full-time vessel, \$194,790 to \$209,750 per part-

time vessel, and from \$14,400 to \$42,500 per occasional vessel during the 2001 and 2002 fishing years (Table 288, Section 8.7.2.4 of Amendment 10 FSEIS). Total revenues per vessel, including revenues from species other than scallops, exceeded these amounts, but were less than \$3.5 million per vessel. Table 289 of Amendment 10 shows the revenues per full-time vessel by tonnage class.

The proposed regulations of Framework 16 would affect vessels with limited access scallop and general category permits. Section 7.1 (Description of the Fishery) of Amendment 10 FSEIS provides 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 information on the number and characteristics of vessels by the region of their principal port and permit category are also shown in Section 8.7.2.4 of Amendment 10 FSEIS. The current information on the number of scallop permits for the years 1994 to 2003 is provided in Table 154. According to the recent permit data, there were 278 vessels that obtained full-time limited access permits in 2003, including 32 small-dredge and 16 scallop trawl permits. In the same year, there were also 32 part-time and 16 occasional limited access permits in the sea scallop fishery. In addition, 2,257 permits were issued to vessels in the open access General Category. These numbers could increase as the fishing year progresses. Therefore, the proposed alternatives of Framework 16 are expected to have impacts on a substantial number of small entities.

Table 154. Limited access and general category permits in the sea scallop fishery.

Permit category	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Full-time	227	227	214	203	202	207	219	223	229	230
Full-time small dredge	5	4	5	3	2	1	3	13	25	32
Full-time trawl	30	32	27	23	23	16	17	16	16	16
Total full-time	262	263	246	229	227	224	239	252	270	278
Part-time	26	21	18	16	11	11	15	14	13	9
Part-time small dredge	8	6	8	8	6	3	4	6	8	16
Part-time trawl	30	28	27	30	26	18	20	18	10	8
Total part-time	64	55	53	54	43	32	39	38	31	33
Occasional	4	3	2	2	3	4	4	5	4	2
Occasional trawl	28	26	25	20	19	20	16	15	15	8
Total occasional	32	29	27	22	22	24	20	20	19	10
Total limited access	358	347	326	305	292	280	298	310	320	321
General category	1,960	2,067	1,984	1,993	1,930	2,074	2,247	2,293	2,493	2,257

7.9.5 Determination of significant effects

The Office of Advocacy at the SBA suggests two criteria to consider in determining the significance of regulatory impacts, namely, disproportionality 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. Framework 16 is not expected to have significant regulatory impacts on the basis of the disproportionality criterion for the following reasons:

1. The majority of the permit holders in the sea scallop fishery are considered small business entities.
2. The alternatives included in this Framework, including the proposed action and the non-preferred alternatives, propose to allocate controlled access area trips in the same proportion for each

category of the limited access scallop permit compared to the no-action levels. The resulting changes in profits, costs, and net revenues are not expected to be disproportional for small versus large entities.

3. The proposed action and the nonpreferred options are 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. The aggregate impacts of the proposed access alternative on revenues, costs, and profits of an average vessel are summarized in Section 6.2.11.4 and were compared to the estimated values for no action. The economic impacts of the individual measures considered by this Framework, including mechanical rotation alternatives, area-access options, habitat closures, gear restrictions, access seasons, groundfish catch and possession limits, fishery monitoring and enforcement provisions, and trip allocations for part-time and occasional vessels, general category and other proposed measures, are analyzed in relevant subsections of Section 6.2 as identified below. The following section provides a summary of the economic impacts of the proposed measures, compares these with the impacts from significant alternatives, and discusses the mitigating factors. The relevant section of Framework 16, which discusses the rationale of each measure, is also identified.

7.9.6 Economic impacts of the proposed measures and alternatives

7.9.6.1 Summary of the aggregate economic impacts and no action

The aggregate economic impacts of the proposed rotation schedule and access to the Georges Bank groundfish areas on vessel revenues, costs, and gross profits are examined relative to “no action” in Section 6.2.11.4. “No action” is defined as the Amendment 10 mechanical rotation without any access to the Georges Bank groundfish areas (Section 6.2.1.4). All the economic values presented in this section are expressed in 1996 constant dollars.

- The combined economic impacts of the proposed access will be positive on the majority of small business entities in the scallop fishing industry even though the proposed rotation strategy with access will generate marginally lower revenues from scallop fishing (by less than \$1 million per year) compared to no action during the 2004-2007 period.
- Access to Georges Bank groundfish areas will have positive impacts, however, on the producer benefits and gross profits of the scallop fishery. Because of the higher scallop abundance and LPUE in the Georges Bank groundfish areas, the operating expenses per pound of scallops will decline by almost 30% with access, and gross profits, calculated as gross revenues net of operating costs and crew shares, are estimated to increase by 18%.
- The long-term economic impacts of access will be positive as well. Annual average fleet revenues will be positive for all access alternatives relative to the no access, no action scenario. This is because higher landings without access will eventually have negative impacts on scallop biomass and will reduce LPUE and landings in future years.

7.9.6.2 Economic impacts of the individual measures

The following provides a summary of the impacts of each individual measure proposed by Framework 16 on small business entities and a discussion of the mitigating factors and significant alternatives considered by the Council:

Economic impacts of access boundaries and scallop TACs:

- Rationale is provided in Section 4.1.1

- Economic Impacts are analyzed in Section 6.2.2.4
- **Summary of the impacts of the proposed option and mitigating factors:**
The proposed access to Georges Bank groundfish areas with boundary alternative 4 will have positive impacts on the gross profits of small businesses, i.e., scallop vessels as Table 66 shows, and as summarized above under the aggregate impacts.
- **Comparison of the impacts of the alternative options:**
Because average annual landings do not differ significantly from one boundary alternative to the other, the economic impacts of these alternatives are expected to be similar. Boundary alternative 3, however, is estimated to result in smaller landings, revenues and total benefits compared to other options.

Economic impacts of alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH:

- Rationale is provided in Section 4.1.2
- Economic Impacts are analyzed in Section 6.2.3.4
- **Summary of the impacts of the proposed option and mitigating factors:**
The proposed habitat closed areas are consistent with the proposed access boundary alternative 4 and boundary alternative 2. For this reason, the economic impacts of the proposed habitat conservation option and alternatives are examined in connection with the access boundary alternatives. Although habitat closures, in general, have negative impacts on landings and revenues of vessels, access to the Georges Bank groundfish areas with the proposed boundary alternative is estimated to have positive impacts on the gross profits of the small businesses in the scallop fishery and will also be consistent with the EFH requirements (Table 66).
- **Comparison of the impacts of the alternative options:**
There are no significant alternatives that minimize economic impacts on small business entities. Status quo habitat closures are consistent with access alternative 1 with economic impacts similar in magnitude to the impacts of the proposed alternative. Habitat alternative 3 (Access alternative 3), however, results in smallest economic benefit among all options.

Economic Impacts of Gear Restrictions:

- Rationale is provided in Section 4.1.3
- Economic Impacts are analyzed in Section 6.2.4.4
- **Summary of the impacts of the proposed option and mitigating factors:**
Prohibiting trawls from accessing groundfish areas is expected to have negative economic impacts on scallop trawl vessels, but have positive impacts on the scallop fishing industry and the dredge sector. This is because fishing by trawls may result in a larger catch of yellowtail flounder and necessitate the closure of the access areas to scallop fishing if the finfish quotas (or TAC) are exceeded. Such a premature closure would reduce the net economic benefits for the majority of the scallop vessels. However, many scallop trawls vessels fish mostly in the Mid-Atlantic areas and do not fish in the New England controlled access areas. Therefore, the negative impacts of this gear requirement would be minimized if trawl vessels could trade their the Georges Bank controlled access trips for Hudson Canyon area trips, where they are allowed to fish with scallop trawls. Also, Amendment 10 provisions provide flexibility to part-time and occasional vessels for fishing in the controlled access areas, and allows them to choose which access area to fish up to the maximum number of trips allocated to each vessel. Therefore, part-time and occasional vessels may be able to use some or all of the Georges Bank groundfish area trips in the Mid-Atlantic areas without the necessity to change gear.
- **Comparison of the impacts of the alternative options:**
There were no significant alternatives other than the status quo, which allows scallop trawls to fish in the Georges Bank groundfish areas. The status quo option would have opposite impacts

compared to the proposed gear restriction as discussed above.

Economic impacts of finfish TACs and procedures to help avoid bycatch

- Rationale is provided in Section 4.1.4
- Economic Impacts are analyzed in Section 6.2.5.4
- **Summary of the impacts of the proposed option and mitigating factors:**

If the yellowtail TACs are exceeded before the scallop landings reach the scallop TACs and the access areas are closed, the landings, revenues and economic benefits will fall below the levels estimated in the Framework 16 document, reducing the economic benefits from access compared to the no action alternative. Without a measure to ensure that yellowtail flounder catches do not exceed the TACs and comply with the US/Canada sharing agreement, however, it would not have been possible to provide access for scallop fishing to the Georges Bank groundfish areas. Therefore, the majority of the scallop vessels are expected to benefit from this measure due to the opportunity to fish in those areas. In addition, the proposed action allows transfer of unused DAS to fish in open areas in case of an early closure of the Georges Bank groundfish areas. This measure could alleviate the negative impacts from hard TACs, reduce derby-style fishing, and may prevent a reduction in vessel revenues in the short-term if access areas are closed early. Furthermore, the rotation schedule proposed by Framework 16 will allocate fewer trips to the Nantucket Lightship area in 2004, and thus will be less likely to result in closure of the Georges Bank groundfish areas. The provision to increase the yellowtail TAC if a specified limit is not harvested by December 1 of each year will also have positive impacts on vessels by extending the season for scallop fishing under the right circumstances. The proposed yellowtail flounder bycatch set-aside, and the procedures to obtain voluntary actions to minimize bycatch will have indirect benefits on the scallop vessels due to the improved management made possible by research, and also by reducing the risk of premature closures of the Georges Bank groundfish areas due to high bycatch.
- **Comparison of the impacts of the alternative options:**

The alternative status quo option of no TAC option, i.e., could result in high bycatch of groundfish species and have negative impacts on this fishery. It could also jeopardize the future opportunities for access to scallop fishing, and thus could reduce the revenues and economic benefits for scallop vessels. The alternative options for DAS transfer that were considered but not proposed by the Council provide more opportunity and flexibility to the vessels regarding transfer of DAS. Option 2 would make it possible to recover a larger proportion of revenue loss from any controlled access trips not taken, but would be very complicated to administer. Options 3 and 4 would probably make it possible for vessels to land the same amount of scallops from the open areas, if not more, compared to estimated landings from controlled access trips that could not be taken due to the closures of these areas. These options were not accepted, however, because of their potentially negative impacts for the scallop biomass and yield (see rationale in Section 4.1.4.1).

Economic impacts of finfish possession limits:

- Rationale is provided in Section 4.1.5
- Economic Impacts are analyzed in Section 6.2.6.4
- **Summary of the impacts of the proposed option and mitigating impacts:**

Because the proposed option increases the possession limit to 1000 lb. of regulated multispecies from the status quo 300 lb./trip possession limit, it will have positive economic impacts on the scallop vessels fishing in the controlled access areas. The yellowtail possession limits are expected to reduce the incentive for targeting yellowtail and reduce the risk of reaching yellowtail TAC before the scallop TAC is caught. Therefore, these measures will have indirect economic benefits for the vessels in the scallop fishery. The proposed option for allowing vessels to retain

up to 100 lbs. of cod per trip (per vessel) for personal use is also expected to have economic positive impacts on the scallop fishery compared to a zero possession limit.

- **Comparison of the impacts of the alternative options:**

The proposed groundfish trip limit is greater than the status quo option of 300 lb. per trip. There are no significant alternatives that increase economic benefits to the scallop fishery while minimizing the risks of high bycatch. On the other hand, the status quo option for allowing cod possession regulated under an aggregate groundfish possession limit would reduce regulatory discards and have more positive impacts on the scallop vessels. The Council did not select this option because the proposed cod possession limit would be more effective in ensuring that cod bycatch will be kept at minimum levels. The alternative zero cod possession option would have negative economic impacts, however, compared to the proposed option that allows vessels to retain 100 lb. of cod per trip.

Economic impacts of access seasons:

- Rationale is provided in Section 4.1.6

- Economic Impacts are analyzed in Section 6.2.7.4

- **Summary of the impacts of the proposed option and mitigating factors:**

The proposed option is expected to have positive impacts on the scallop vessels. It will prevent scallop fishing during months when many species of groundfish are at peak spawning activity, and as a result, it will make access to the Georges Bank groundfish areas more acceptable. By allowing simultaneous access to these areas, it will provide more flexibility to fishermen to maximize their landings and revenues from these areas.

- **Comparison of the impacts with the alternative options:**

Year-round access to the Georges Bank groundfish areas under alternative-3 would improve safety and will help to spread out landings throughout the year and prevent price reductions from higher landings when fishing is limited to specific seasons and months. On the other hand, this alternative could have adverse effects on groundfish spawning and increase bycatch during months when bycatch levels could not be predicted. The Council did not select this alternative because of the risk of these adverse effects on the groundfish fishery, which could outweigh the economic benefits of year-round access for the scallop vessels. The proposed simultaneous access to the Georges Bank groundfish areas, however, has higher economic benefits compared alternative 1, which would allow only sequential access to these areas, because it will provide more flexibility to fishermen to maximize their landings and revenues from these areas.

Economic impacts of at-sea observers, TAC set-aside, and fishery monitoring:

- Rationale is provided in Section 4.1.7

- Economic Impacts are analyzed in Section 6.2.8.4

- **Summary of the impacts of the proposed option and mitigating factors:**

Framework 16 proposes to continue with the existing sampling frequency that can be funded with a one percent TAC set-aside (status quo). The scallop industry will benefit from improved management made possible through sampling funded by set-asides. Although TAC set-aside will reduce part of the scallop revenue available to the scallop vessels, these funds will also reduce the compliance costs for vessels by providing compensation for observer coverage.

- **Comparison of the impacts with the alternative options:**

The proposed option minimizes the costs of compliance for the scallop vessels compared to alternative options that would increase the TAC set-aside to provide enhanced sampling frequency. This is because the recent analysis showed that a one-percent set aside would be sufficient to achieve the target precision for yellowtail flounder bycatch estimates.

Economic impacts of enforcement provisions:

- Rationale is provided in Section 4.1.8
- Economic Impacts are analyzed in Section 6.2.9.4
- **Summary of the impacts of the proposed option and mitigating factors:**
The proposed enforcement provisions are expected to improve overall management of the scallop resource and thus, indirectly, increase economic benefits. Improved compliance through these enforcement procedures will reduce the risks of high bycatch and premature closures of the Georges Bank groundfish areas and would prevent the fishery from exceeding the scallop TAC. The costs associated with notification of a closed area trip prior to leaving the dock, the increase in polling frequency, and other related measures are minimal compared to these expected benefits.
- **Comparison of the impacts with the alternative options:**
There are no significant alternatives that would minimize the costs of compliance. In fact, not having effective enforcement procedures could reduce the economic benefits for the majority of the scallop vessels if the scallop and/or groundfish TACs were exceeded due to the violations of possession and DAS limits in the access areas.

Economic impacts of reporting requirements:

- Rationale is provided in Section 4.1.9
- Economic Impacts are analyzed in Section 6.2.10.4
- **Summary of the impacts of the proposed option and mitigating factors:**
The requirement to have a VMS onboard for all scallop vessels that fish in the reopened closed areas will increase the costs of fishing for occasional vessels and vessels with the general category permits. Currently all full and part-time vessels are required to have a VMS onboard, thus they will not be impacted from this action. For occasional vessels, the revenues from the controlled access trips will significantly exceed the VMS costs, however. The impacts of these requirements on the general category vessels are examined in Section 6.2.13.4 in combination with the proposed measure that would allow them to fish in the access areas. Even though VMS and other reporting requirements will increase the fishing costs for occasional and general category vessels in the scallop fishery, the economic benefits of accessing these areas are expected to exceed these costs. The reporting requirements will also have indirect economic benefits for the scallop fishery through improved management of the scallop resource and are expected to outweigh the compliance costs.
- **Comparison of the impacts with the alternative options:**
The alternative action would exempt the occasional and general category vessels from VMS and other reporting requirements. Such action could have negative indirect impacts on the scallop fishery and economic benefits, however, by making it difficult to administer the controlled access program and control scallop mortality and impacts on finfish bycatch.

Economic impacts of mechanical rotation alternatives

- Rationale is provided in Section 4.1.10.1
- Economic Impacts are analyzed in Section 6.2.11.4
- **Summary of the impacts of the proposed option and mitigating factors:**
The proposed rotation strategy minimizes the risk of high yellowtail bycatch in the Nantucket Lightship Area and will, therefore, reduce the likelihood of significant scallop revenue loss and reduce the total net benefits from closure of access areas before the scallop TAC is reached. As a result, the mechanical rotation strategy proposed by Framework 16 will have positive economic benefits on scallop vessels and small businesses in the scallop fishery.
- **Comparison of the impacts with the alternative options:**
The alternative to the proposed option is the Amendment 10 mechanical rotation, which provides

access to the Nantucket Lightship Area at a higher fishing mortality rate. The biological estimates indicate, however, that it is improbable that the Nantucket Lightship Area would remain open long enough to reach the scallop TAC if Amendment 10 mechanical rotation was implemented. Therefore, the economic benefits with this option will likely be lower if the Nantucket Lightship Area closes before the scallop TAC is reached. In short, this option does not result in higher economic benefits on the small business entities compared to the proposed rotation alternative.

Economic impacts of trip and DAS allocations

- Rationale is provided in Section 4.1.10.2
- Economic Impacts are analyzed in Section 6.2.12.4
- **Summary of the impacts of the proposed option and mitigating factors:**

There are no changes to the possession limits and DAS trade-offs in Framework 16 from those proposed by Amendment 10 for full-time vessels. Therefore, the economic impacts of area specific DAS and trip allocations are within the range of impacts analyzed in Amendment 10 (Section 8.7.2.2 and 8.7.2.3 in the Amendment 10 FSEIS). Framework 16 proposes to change the possession trips for the part-time and occasional vessels, however, in order to correct the inequities in access area trip allocations. Specifically, the allocations for the part-time and occasional vessels will be at the same proportions to the full-time allocations under the DAS schedules prior to the Amendment 10. Overall impacts of this adjustment during the 2004-2007 period will be positive for part-time vessels, but negative for occasional vessels. Given that there were 33 part-time and 10 occasional limited access permits in 2003, this adjustment will likely impact more vessels positively than negatively (Table 154). In addition, occasional vessels do not usually fish in the controlled access areas, whereas the majority of the part-time vessels took closed area trips in the past (see **Table 142**). Therefore, any inequity would impact part-time vessels relatively more compared to their occasional counterparts. Framework 16 is also proposing a change in the DAS and trip exchange option in order to prevent administrative complications that could arise if trips with unequal possession limits were exchanged. Under this alternative, full-time vessels would trade only with another full-time vessel, and the trades between part-time and occasional vessels would be similarly restricted. Although, this measure is necessary to avoid management complications from unequal exchanges, it will also reduce the number of opportunities for trading controlled access trips. It will be especially difficult for part-time and occasional vessels because of the small number of vessels fishing in these categories. On the other hand, because the vessels in the part-time and occasional category have the flexibility to use their controlled access trips in any access area up to the maximum number of trips allocated to each vessel. This flexibility may reduce the need to exchange DAS allocations and mitigate some of the negative impacts resulting from a restrictive trade.
- **Comparison of the impacts with the alternative options:**

The alternative to the proposed option, i.e., equal possession limits for part-time and occasional vessels, would be inconsistent with the historical shares in DAS allocations for these vessels. Specifically, part-time vessels would be allocated fewer access trips in 2004, and occasional vessels more trips in 2004, compared to what they would have been allocated based on their historical shares. This alternative would not minimize the negative impacts on a significant number of small business entities because there are more part-time limited access vessels operating in the scallop fishery than occasional vessels. An advantage of the equal possession limits would be that they provide more flexibility with DAS exchanges for the controlled area trips. The vessels in all limited access categories would have a larger pool of vessels to trade their area-specific DAS and trip allocations. The Council did not select this options for the reasons discussed above, i.e., to correct the inequities that would arise from equal possession

limits.

Economic impacts of fishing in controlled access areas by vessels having general category permits

- Rationale is provided in Section 4.1.11
- Economic Impacts are analyzed in Section 6.2.13.4
- **Summary of the impacts of the proposed option and mitigating factors:**
Allowing access to the general category vessels to the controlled access areas will have positive impacts on the revenues of these vessels. The profitability of the access area trips will depend, however, on net revenues, that is, revenues net of operating costs, crew shares and VMS costs. The requirement to carry a VMS onboard will impose additional compliance costs for these vessels, which are estimated to be \$3,500 per year including the monthly message costs. Without these requirements, however, it would not be possible to control scallop mortality and the adverse impacts of fishing on groundfish species, and it may not be possible to provide access the Georges Bank groundfish areas. Therefore, the benefits of access for both limited access and general category vessels are expected to outweigh the cost of compliance with VMS, observer coverage, and other reporting requirements.
- **Comparison of the impacts with the alternative options:**
There are no significant alternatives that would generate higher benefits for the general category vessels. The only alternative is the status quo option, which does not allow access for the general category permits to the Georges Bank groundfish areas. Exempting general category vessels from VMS requirements or observer coverage would minimize the negative impacts for these vessels by reducing their compliance costs, but would make monitoring the scallop catches and bycatch impossible, and thus would result in indirect adverse effects on the limited access scallop vessels.

7.9.7 Indirectly affected industries

The overall impacts of the proposed measures on regional revenues and incomes will be higher than the estimates given above because of the indirect and induced impacts. 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. These sectors are listed in Table 368, Section 9.2.4.1 of Amendment 10 FSEIS. The sales multiplier for the coastal counties in the Northeast was estimated to be approximately 1.8 in 1997 for the scallop dredge and trawls. Given that the impacts on fleet revenues were marginally different with the proposed access to the Georges Bank groundfish areas compared to no action-no access, the changes in regional sales and incomes are not expected to be significant.

7.9.8 Identification on Overlapping Regulations

The proposed regulations do not create overlapping regulations with any state regulations or other Federal laws.

7.9.9 Conclusion

The preceding Initial Regulatory Flexibility Analysis and the relevant sections of RIR indicate that the regulations proposed in Framework 16 will have not “significant impacts” on a substantial number of small businesses.

7.10 REGULATORY IMPACT REVIEW

7.10.1 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 1980 (RFA).

This RIR summarizes the effects of the proposed management plan and other alternatives considered in this framework that has been developed to rebuild the scallop resource. The Framework 16 document contains all the elements of the RIR/RFA, and the relevant sections are identified by reference to the document.

The purpose and need for the action are described in Sections 3.1. The description of proposed alternatives and the no action alternative is provided in Sections 4.1 and 4.2.1, respectively. The description of fishery is provided in Section 7.1 of the Amendment 10 FSEIS. Information about the number and characteristics of vessels by the region of their principal port and permit category were provided in Section 8.7.2.4 of the Amendment 10 FSEIS.

7.10.2 Economic Impacts

Section 6.2.11.4 evaluated the aggregate economic impacts of Framework 16 access and rotation alternatives considered by the Council. Sources of uncertainty are identified in Section 6.1.4.4. The economic impacts of the individual measures considered by Framework 16 are discussed in the following sections and the numerical results are presented in the tables included in those sections:

<u>Title</u>	<u>Reference</u>
Economic Impacts of No Action-No Access	Section 6.2.1.4
Economic Impacts of Access Boundaries and Scallop TACs	Section 6.2.2.4
Economic Impacts of Alternatives to reconcile habitat closure areas to minimize adverse effects of fishing on EFH	Section 6.2.3.4
Economic Impacts of Gear Restrictions	Section 6.2.4.4
Economic Impacts of Groundfish Catch Limits	Section 6.2.5.4
Economic Impacts of Finfish Possession Limits	Sections 6.2.6.4
Economic Impacts of Access Seasons	Sections 6.2.7.4
Economic Impacts of At-Sea Observers, TAC Set-Aside, and Fishery Monitoring	Sections 6.2.8.4
Economic Impacts of Enforcement Provisions	Section 6.2.9.4
Economic Impacts of Reporting Requirements	Section 6.2.10.4
Economic Impacts of Mechanical Rotation Alternatives	Section 6.2.11.4
Economic Impacts of Trip and DAS allocations for part-time and occasional vessels	Section 6.2.12.4
Economic Impacts of Fishing in Controlled Access Areas by vessels having general category permits	Section 6.2.13.4

The Initial Regulatory Flexibility Analysis, which evaluates the impacts of management alternatives on small businesses, is provided in Section 7.9.

7.10.3 Summary of Regulatory Impacts

The combined economic impacts of the proposed regulations on the scallop fishery, consumers and on total economic benefits to the nation are summarized below. The economic costs and benefits of the final alternatives are compared with the no action alternative. “No action” is defined as no access to the Georges Bank groundfish areas, which will remain in effect unless access is provided through Framework 16.

- The results of the economic analyses show that access to the Georges Bank groundfish areas will not have a significant impact on the average fleet revenues per year and the total economic benefits during the 2004-2007 period. Proposed rotation strategy with access will generate marginally lower revenues from scallop fishing (by less than \$1 million per year) compared to no action.
- Total economic benefits, as measured by the sum of the producer and consumer surpluses for the four years from 2004 to 2007, will decline marginally by about \$1.42 million. This decline is due mainly to the decline in consumer benefits, by \$32.60 million with lower landings and higher prices with access.
- The producer benefits will be positive, however, because of lower fishing costs with access as shown in Table 58. Producer surplus is measured by total revenues net of operating expenses, and it includes both vessel profits and crew income. The cumulative present value of the producer surplus net of no action value is estimated to exceed \$30 million during the 2004-2007 period with the proposed access alternative 4.
- Access may reduce, however, the total crew DAS worked in the scallop fishery approximately by 25% in the short-term, and slightly less over the long-term. It is uncertain, however, to what extent this reduction in total DAS worked by crew would translate into a reduction, if at all, in the total number of crew employed by the scallop fishery. On the income side, the impacts from access will be positive. Crew income is estimated to increase by more than 7%, both during the 2004-2007 period and over the long-term because of lower trip expenses with access. The increase in revenues and regional incomes through the multiplier impacts may also lead to an increase in employment in sectors with backward or forward linkages to the scallop fishery.
- The long-term economic impacts from access will be positive, with an increase in the total economic benefits by \$45.75 million net of no action (no access). The producer surplus, which incorporates cost savings and is realized by the scallop fishing industry (including the crew), is expected to increase by \$70.07 million over the 10-year projection period.
- By increasing the scallop catch rates in the long run and reducing operating costs, the proposed measures are expected to increase the productivity of the scallop industry.
- Although the proposed rotation and access are expected to benefit most vessels in the scallop fishery by increasing the productivity of the scallop resource, these benefits may not necessarily be equally distributed. The individual measures, including access and the mechanical rotation strategy proposed by Framework 16, could have some distributional impacts on fishing families and communities, on scallop vessels depending on their size, and on processors and ports. The

proximity of these entities to open and controlled access areas, as well as to the areas closed for fishing because of rotation and/or habitat protection, may result in differential impacts from area rotation. The one-to-one exchange provision for the access allocations could mitigate some of these impacts. The proposed adjustment to the controlled access trip allocations for the part-time and occasional vessels will also have some distributional impacts (see Section 6.2.12.4). The restrictions on the DAS exchange provisions for controlled access trips; specifically restricting these exchanges to the vessels in the same permit category will reduce the flexibility and opportunities for exchange for some vessels, especially for those in the part-time and occasional category. The proposed gear restrictions for fishing in the Georges Bank groundfish areas will have positive impacts on most of the vessels in scallop fishery but may have negative impacts on scallop trawl vessels. The distributional impacts of area-specific DAS allocations were also examined in detail in Section 8.7.2.3 and in Section 7.8 (Social Impact Assessment) in the Amendment 10 FSEIS. These analyses are also relevant for the access options proposed by Framework 16. A discussion of the distributional impacts from area rotation, from alternative effort allocation and habitat closures, and from other measures included in Framework 16 is also provided in the relevant social impact sections of Framework 16 (Section 6.2).

- The cumulative impacts of the measures from Framework 16 proposed measures and the past actions, including Frameworks 11 to 15 to the scallop FMP, are estimated to be positive. Adjustment of the DAS allocations, implementation of trip limits and access to the Georges Bank groundfish areas had positive impacts on the scallop industry by increasing the revenues, producer and consumer surpluses and net benefits in the past. Although, the actions proposed by Framework 16 will not have significant impacts on the fleet revenues and economic net benefits in the short-term, the producer benefits will be positive because of lower fishing costs with access. Over the long-term, the economic benefits from Framework 16 actions will exceed the benefits that could be realized with no action (no access). As a result, cumulative economic benefits, which measure the sum of benefits from previous and proposed actions, are expected to be positive (see Section 6.3.7.2.4)

7.10.4 Enforcement Costs

The enforcement costs and benefits of the proposed options for Framework 16 are within the range of impacts addressed in Section 8.9 in the Amendment 10 FSEIS. The qualitative analysis included a comprehensive discussion of the pros and cons of the area rotation alternatives, alternatives for allocating effort, reducing bycatch and bycatch mortality, and alternatives for general category permits from an enforcement perspective. Section 8.9.5 of Amendment 10 also provided a description of the alternatives for improving data collection and monitoring and discussed the implications of these in terms of the enforcement costs and benefits.

Despite the fact that rotational management, proposed area access programs and closures may increase the enforcement requirements and administrative burden, the monetary costs for the government may not appreciably change as long as the budgetary allocations for enforcement do not allow such an increase. Allocation of the existing resources to improve enforcement of new scallop regulations, however, may reduce the overall efficiency of enforcement for fishery regulations in general if such enforcement requires a reallocation of resources. On the other hand, the proposed measures for improving data collection and monitoring are expected to improve management of the scallop resource and increase the enforcement efficiency, offsetting some of these costs. Framework 16 proposals include a requirement to carry a VMS onboard for all vessels, including the ones with general category scallop permits, and incorporation of an activity code into the VMS programming to indicate when a scallop vessel is on a closed area trip. These measures will enable law enforcement to quickly check if the vessel

is authorized to be in the Nantucket Lightship Area, Closed Area I, or Closed Area II. The increased polling frequency, and equivalent reporting and monitoring requirements for general category vessels will enhance monitoring, making it easier to catch violators when fishing in the groundfish closed areas and to prevent transfers at sea to other scallop vessels. All of these measures, including the continuation of observer coverage program, are expected to reduce enforcement costs and/or increase the efficiency of the existing enforcement requirements. The costs of the observer coverage program will be funded by the TAC set-asides as discussed in Section 5.1.8 in the Amendment 10 FSEIS.

7.10.5 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 effects 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 Framework 16 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. The proposed access and rotation will result in marginally negative impacts on scallop fleet revenue and total economic benefits in the short-term, but positive impacts over the long-term. Therefore, the proposed regulations may not have an annual impact on the economy of \$100 million or more. The proposed alternatives will not, however, 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.

8.0 GLOSSARY

Annual fishing mortality target – a rate of removals that when applied over a fishing year is consistent with the objectives of the FMP.

Annual potential increase – the percent increase in total or relative biomass that would occur during a one-year interval if no fishing occurs (i.e. zero fishing mortality). Projection models take into account the size frequency distribution of the population, the expected growth of individuals at each size class, and natural mortality.

Area based management – in contrast to resource wide allocations of TAC or days, vessels would receive authorization to fish in specific areas, consistent with that area's status, productivity, and environmental characteristics. Area based management does not have to rotate closures to be effective.

Area rotation – a management system that selectively closes areas to fishing for short to medium durations to protect small scallops from capture by commercial fishing until the scallops reach a more optimum size. Closed areas would later re-open under special management rules until the resource in that area is similar to other open fishing areas. Area rotation is a special subset of area based management that relies on an area closure strategy to achieve the desired results when there are sufficient differences in the status of the management areas.

B_{max} – a theoretical value when the scallop stock with median recruitment is fished at F_{max}. For a stock without a stock-recruitment relationship, like sea scallops, this stock biomass produces MSY when fished at F_{max}.

Biological Opinion – an ESA document prepared by either the NMFS or USFWS describing the impacts of a specific Federal action, including an FMP, on endangered or threatened species. The Biological Opinion concludes whether or not the NMFS/USFWS believe that the actions are likely to jeopardize the continued existence of any of the protected species, and provides recommendations for avoiding those adverse impacts.

Closed rotation area – an area that is temporarily closed to postpone mortality on abundant, small scallops.

Consumer surplus - The net benefit consumers gain from consuming fish based on the price they would be willing to pay for them. Consumer surplus will increase when fish prices decline and/or landings go up.

Contagious recruitment – similar amounts of scallop settlement in related areas. When scallop settlement is above average in one area, it tends to be above average in neighboring areas.

Controlled access – a program that allows fishing in a specified area under rules that differ from the normal fishery management rules that apply to normal, open fishing areas. Often controlled access areas have a scallop TAC, a scallop possession limit, and area-specific trip and DAS allocations. Other regulations may apply to achieve certain conservation objectives.

Critical habitat – an area that has been specifically designated under the ESA as an area within the overall geographical region occupied by an endangered or threatened species on which are found the physical or biological features essential to conservation of the species.

Day-at-sea (DAS) – is each 24-hour period that a vessel is on a scallop trip (i.e. not declared out of the day-at-sea program) while seaward of the Colregs line.

Day-at-sea tradeoff – the number of days automatically charged for fishing for scallops in designated areas, regardless of the time actually fished.

Day-at-sea use – the amount of time that a vessel spends seaward of the Colregs line on a scallop trip.

Days-at-sea accumulated – days charged against a vessel's annual day-at-sea allocations, including day-at-sea tradeoffs. Trips in controlled access areas are often charged a pre-established amount of DAS, regardless of the actual duration of the trip.

Endangered species – a species that is in danger of extinction throughout all or a significant portion of its range.

ESA - Endangered Species Act of 1973 as amended.

Exploitable biomass - the total meat weight of scallops that are selected by fishing, accounting for gear and cull size, at the beginning of the fishing year⁶⁶.

F_{max} – a fishing mortality rate that under equilibrium conditions produces maximum yield-per-recruit. This parameter serves as a proxy for F_{msy} for stocks that do not exhibit a stock-recruitment relationship, i.e. recruitment levels are driven mostly by environmental conditions.

Fixed costs - These costs include expenses that are generally independent of the level of fishing activity, i.e., DAS-used, such as insurance, license, half of repairs, office expenses, professional fees, dues, utility, interest, dock expenses, bank, rent, store, auto, travel, and employee benefits.

Fixed duration closure – a rotational closure that would be closed for a pre-determined length of time.

Fixed rotational management area boundaries – pre-defined specifications of areas to be used to manage area rotation.

FMP – Fishery Management Plan.

Heterogeneity – spatial differences in the scallop resource, life history, or the marine environment.

Incidental Take Statement – a section of a Biological Opinion that allows the take of a specific number of endangered species without threat of prosecution under the ESA. For the Scallop FMP, an incidental take statement has been issued for a limited number of sea turtles to be taken by permitted scallop vessels.

⁶⁶ The **average exploitable biomass** is different and is defined as the total meat weight of scallops that are selected by fishing averaged over the fishing year, accounting growth, natural mortality, fishing mortality, and gear and cull size.

IWC – International Whaling Commission; an international group that sets international quotas and/or establishes moratoria on harvesting of whales.

Localized overfishing – a pattern of fishing that locally exceeds the optimum rate, considering the age structure of the population, recruitment, growth, and natural mortality. This effect may cause mortality that is higher than appropriate on small scallops while under-fishing other areas with large scallops (assuming that the overall amount of effort achieves the mortality target for the entire stock). The combined effect is to reduce the yield from the fishery through the loss of fast-growing small scallops and the loss of biomass from natural mortality on very large scallops.

Long-term closure area – an area closed to scallop fishing for reasons other than achieving area rotation objectives. These areas may be closed to minimize habitat impacts, avoid bycatch, or for other reasons.

LPUE – Similar to catch per unit effort (CPUE), commonly used terminology in fisheries, LPUE in the Scallop FMP refers to the amount of landings per DAS a vessel achieves. This value is dependent on the scallop abundance and catch rate, but also depends on the shucking capacity of the crew and vessel, since most of the scallop catch must be shucked at sea. Since discard mortality for sea scallops is low, discards are not included as a measure of catch in the calculation of LPUE.

Magnuson Act – Magnuson Stevens Act of 1976 as amended.

Meat yield – the weight of a scallop meat in proportion to the total weight or size of a scallop. Scallops of similar size often have different meat yields due to energy going into spawning activity or due to the availability of food.

MMPA - Marine Mammal Protection Act of 1972 as amended.

NAAA - The Northwest Atlantic Analysis Area was a geographic area used in the habitat metric analysis. Its boundary to the North is the Hague line, the NC/SC border to the South, the coastline to the West, and the 500 fathom depth contour to the East.

NEPA – National Environmental Policy Act of 1972 as amended.

Net economic benefits - Total economic benefits measure the benefits both to the consumers and producers and are estimated by summing consumer and producer surpluses. Net economic benefits show, however, the change in total economic benefits net of no action.

NMFS – National Marine Fisheries Service.

Nominal versus real economic values - The nominal value of fishing revenues, prices, costs and economic benefits are simply their current monetary values unadjusted for inflation. Real values are obtained, however, by correcting the current values for the inflation.

Open area – a scallop fishing area that is open to regular scallop fishing rules. The target fishing mortality rate is the resource-wide target.

Operating expenses or variable costs - The operating costs measures the expenses that vary with the level of the fishing activity including food, ice, water, fuel, gear, supplies and half of the annual repairs.

Opportunity cost - The cost of forgoing the next best opportunity. For example, if a fisher's next best income alternative is to work in construction, the wage he would receive from construction work is his opportunity cost.

PDT – Scallop plan Development Team; a committee of experts that contributed to and developed the technical analysis and evaluation of alternatives.

Potential biomass increase - the annual change in the total biomass of scallop meats if no fishing occurs.

Producer surplus -Producer surplus for a particular fishery shows the net benefits to harvesters, including vessel owners and the crew, and is measured by the difference between total revenue and operating costs.

Recently re-opened area– an area that has recently re-opened to scallop fishing following a period of closure that postponed mortality on small scallops. The annual TAC and target fishing mortality rate is defined by time-averaged fishing mortality that allows the area-specific target to deviate from the norm. Special rules (i.e. day-at-sea allocations or trips with possession limits and day-at-sea tradeoffs) may apply.

Recruitment – a new year class of scallops measured by the resource survey. Scallop larvae are pelagic and settle to the bottom after 30-45 days after spawning. The resource survey, using a lined dredge, is able to capture scallops between 20 – 40 mm, but more reliably at between 40 and 60 mm. Recruitment in this document refers to a new year class that is observable in the survey, at around two years after the eggs had been fertilized and spawned.

Recruitment overfishing – a high level of fishing mortality that causes spawning stock biomass to decline to levels that significantly depresses recruitment. Because sea scallops are very productive, this mortality rate is substantially higher than F_{max} and the biomass where recruitment is threatened is much lower than the present biomass target.

SAFE Report – A Stock Assessment and Fishery Evaluation Report, required by the Sustainable Fisheries Act. This report describes the present condition of the resource and managed fisheries, and in New England it is prepared by the Council through its Plan Development Teams (PDT) or Monitoring Committees (MC). The Scallop PDT is the MC for the Atlantic Sea Scallop FMP and prepares this report.

Scallop productivity – the maximum average amount of biomass that can be taken from a defined area.

Shucking – a manual process of cutting scallop meats from the shell and viscera.

Size selection – in the scallop fishery, size selection occurs at two points: when the fishing gear captures the scallop and when the crew culls the catch before shucking. At the first point, size selection depends on escapement through the dredge rings, twine top, or trawl meshes. At the second point, size selection depends on the size of the catch and marketability. Small scallops are less valuable and more time consuming to shuck a pound of meats. These factors influence whether the crew retains scallops at a smaller or larger size. Size selection by the fishery is the combined effect of mortality from landed scallops, from discard mortality, and from non-catch mortality from the fishing gear. Except under certain rare conditions, most of the mortality has been associated with the landed portion of the catch.

TAC – Total allowable catch is an estimate of the weight of scallops that may be captured by fishing at a target fishing mortality rate. The TAC could apply to specific areas under area based management rules.

Take – a term under the MMPA and ESA that means to harass, harm , pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct with respect to either a marine mammal or endangered species.

Ten-minute square – an approximate rectangle with the dimensions of 10-minutes of longitude and 10-minutes of latitude.

Threatened species – any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

USFWS – US Fish and Wildlife Service

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10.0 ACKNOWLEDGEMENTS; AGENCIES AND PERSONS CONSULTED

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11.0 COMMENTS AND RESPONSES

11.1 Response to Comments

During the development of the proposed action, the Council received five written comments from three fishing organizations and the NMFS Regional Office on the framework adjustment and the alternatives under consideration. A representative of Oceana, some fishermen, and industry advisors also made oral comments during the Council meetings where Framework 16/39 was under discussion.

- 1. Framework Adjustment 16/39 should include an option to allow groundfish vessels that participate in the Closed Area II special access program to retain the 400 lb. possession limit currently allowed for open access scallop permit holders.***

The Council determined that such an alternative was unnecessary, because the proposed action in Amendment 10 would allow this to occur. Framework adjustments or amendments that would enable a Special Access Program under the Multispecies FMP would need to evaluate the effect of the fishery on scallop bycatch and on the scallop resource.

- 2. The most important issue to be addressed is approval of rotational access in 2004 to the New England Nantucket Lightship and Closed Area I, as envisioned in the discussion and development of Amendment 10. If this is not accomplished there will be significant negative impacts of the scallop industry.***

The Council agrees and this framework adjustment would allow access to parts of the groundfish closed areas during the 2004 fishing year. Updated data and analysis indicates that better yield would be achieved by changing the order of rotation, however, opening Closed Area II in 2004 and Closed Area I in 2005, rather than in the original order as predicted by the Amendment 10 analysis using 2002 survey data.

- 3. Framework 16 should allow the discussion of general category vessels being required to have VMS to give the Council the opportunity to decide at the second meeting whether this should be a requirement for general category scallop vessels based upon their final actions taken on Amendment 13.***

The Council agreed and the proposed action includes a requirement that all vessels (including general category vessels) must operate VMS when they are authorized to take trips into the access areas. Most vessels with general category scallop permits will not fish in the access areas, however, and it is unnecessary and costly to require the entire 2200 vessels with general category permits to operate VMS.

- 4. Part-time and occasional limited access scallop vessels should be allocated DAS that are equivalent to the percent of a full-time scallop allocation that is made in open fishing areas.***

The Council agreed and the proposed action includes an adjustment so that the total controlled access DAS allocations and total potential scallop catches are 40% and 1/12th of a full-time allocation, respectively. The Hudson Canyon Area DAS allocations could not be adjusted mid-season in 2004, but the framework adjustment will apply to the Hudson Canyon Area DAS allocations in future fishing years.

- 5. Framework 16 should allow the NEFMC to consider new information from the PDT to calculate closed area trips for New England and reevaluation of closed area trips in the Mid-Atlantic region.***

The focus of the framework adjustment is on access to parts of the Georges Bank closed areas. New data from the SMAST and R/V Albatross resource surveys in 2003 were used to re-estimate trip and DAS allocations for 2004-2007. Compared to the Amendment 10 analysis using 2002 data, these data increased the potential allocation in the Nantucket Lightship Area by one trip and decreased the potential allocation in Closed Area II. Framework 16, however, reduces the annual fishing mortality target in the Nantucket Lightship Area to be consistent with the revised rotation schedule. As a result, the TACs with a $F=0.2$ fishing mortality target provide for a maximum of one Nantucket Lightship Area trip and two Closed Area II trips per limited access scallop vessel (see Table 15 in the Framework 16 document). With the original $F=0.2$ fishing mortality target, the TAC would have been sufficient to allocate three trips in the Nantucket Lightship Area and one trip in Closed Area I during 2004 (see

Table 42 in the Framework 16 document).

- 6. *If Framework 16 does not require vessels with general category permits to use VMS when fishing for 400 lbs. per trip, then the framework adjustment should reverse the Amendment 10 proposed action to prohibit limited access vessels from fishing under general category rules.***

The proposed action in this framework adjustment would require vessels with general category permits to operate VMS while the vessel is authorized to take a trip targeting scallops in the Georges Bank access areas. Other actions that govern whether a vessel can fish in a limited access and an open access fishery at the same time to target a species does not meet the purpose and need for this framework adjustment.

- 7. *The framework adjustment analysis should utilize new habitat related data, collected by the SMAST video survey.***

These data were very preliminary and not yet ready for a full-blown analysis. Nonetheless the EA includes a qualitative analysis of these data, focusing on the distribution of the bottom substrate characteristics in the newly opened portion of Closed Area I, derived from these preliminary samples.

- 8. *The potential actions delaying implementation of Amendment 13 to the Northeast Multispecies FMP may impact the Council's planned action to establish an area access program for the sea scallop fishery in the multispecies closed areas. The framework analyses and measures must be consistent with the baseline analysis in Amendment 13.***

The Council relied on the Amendment 13 analysis and chose alternatives for the proposed action, acting as if Amendment 13 will be approved. Therefore the proposed Framework 16/39 action is consistent with the mortality goals and rebuilding estimates in Amendment 13, and the measures in the Framework 16 proposed action would be consistent with the proposed multispecies regulations under Amendment 13. At this time, the proposed action in Amendment 13 has been approved by the Secretary of Commerce. Implementation of Amendment 13 regulations is expected by the beginning of the groundfish fishing year, pending Presidential approval of a bill that would lift a Congressional ban on expenditures to implement Amendment 13.

- 9. *The release of additional DAS on August 15, 2004 according to Amendment 10 would complicate and potentially preclude implementation of a closed area fishery for the 2004 sea scallop fishing year, unless the Joint Framework establishes measures to compensate for the added fishing effort in open areas.***

Considering this problem, the Council's comments on the proposed rule for Amendment 10 recommended delaying the default Amendment 10 (no access) DAS allocation deadline. More importantly, the proposed action for this framework adjustment (see Section 4.1.10.1.2) would allocate the additional 2004 controlled access allocations only to vessels that fished less than the initial Amendment 10 DAS allocations for 2004 (42 full-time DAS, for example). Vessels that used the default open area DAS allocations (more than 42 full-time DAS in 2004) would be ineligible for controlled access allocations for the Georges Bank areas in 2004.

10. A hard bycatch TAC would promote a derby fishery in the access areas, presenting safety issues and compromises of overall economic yield

Although the Council adopted a hard TAC approach, the proposed action includes measures that are expected to reduce the potential for a derby style fishery. These measures include revising the mechanical rotation schedule and fishing mortality targets, an access season that avoids fishing during peak groundfish spawning times, a provision to adjust the yellowtail flounder TACs if by December 1 it is apparent that the US groundfish fishery and the 10% TAC will not exceed the overall TAC for the US fishery, and a transfer provision whereby vessels that cannot take controlled access trips before the yellowtail flounder catches reach the TAC may use a portion of them to fish in open scallop fishing areas.

11. There is no reasonable justification for restricting the access programs on the basis of bycatch concerns.

Several types of restrictions were adopted to minimize the effect of the proposed action on bycatch and on overfished groundfish species. These actions furthermore reduce impacts on the groundfish resources and the fisheries that depend on them, by limiting the potential for increases in groundfish bycatch during the access program. This includes a hard TAC for yellowtail flounder, a species that were most frequently observed in the 2000 scallop fishery bycatch in the access areas. By proxy, this will also cap the catches of other regulated groundfish and overfished species. The Council adopted a 10% TAC allocation for this program to ensure that the groundfish fishing mortality does not increase above the uncertainty in the Amendment 13 groundfish rebuilding estimates.

12. Substantial uncertainty exists about what the actual level of yellowtail flounder bycatch will be in 2004 and future years. The access program should be given the opportunity to run, collecting data from trips both within the access and open areas, and to evaluate that information for future management decisions.

It was because of this uncertainty that the Council was reluctant to expand the season beyond the range of time that the 2000 access fishery operated. It is also the reason that the proposed action requires a 10% TAC limit for yellowtail flounder bycatch to prevent the catches to exceed acceptable amounts. Both actions are consistent with the risk adverse management strategy espoused by the National Standard 1 guidelines. Nonetheless, the proposed action allows access to occur simultaneously in all re-opened areas, which is an expansion of the time that area access was allowed in the 2000 scallop fishery. The Council agrees that more data will improve our ability to make better management decisions in the future. Enhanced sea sampling, funded by the TAC and DAS set-aside programs that will apply to the controlled access trips and to open area trips (pending approval of Amendment 10), will provide more data that might enable a re-evaluation of the access seasons in future allocation adjustments.

13. The regulations for the Nantucket Lightship Area access program should include a twine top configuration specification to ensure reduced flounder bycatch.

The Council rejected this alternative because analyses were insufficient to show its effectiveness for reducing bycatch.

14. If it appears that the fleet is getting near the bycatch TAC, a certain number of the DAS allocations should be re-assigned to the open area fishery.

A method for allowing this was included in the proposed action, up to the limit on open area DAS allocations for individual vessels proposed in Amendment 10 with no access.

15. Less than a 15% yellowtail flounder TAC allocation is unjustified because the restrictive 15% allowance in Framework 13 was due to the overfished status of the Georges Bank yellowtail flounder at that time. It under reflects the scallop fleet's historical allocation.

Analysis shows that the yellowtail flounder landings by the scallop fleet over the last decade or so have rarely been more than 10% of the total yellowtail flounder landings. The basis for the 10% allocation in the proposed action was much different than that applied to the Framework 13 decision. In this case, the TAC decision was made in the context of the more stringent fishing mortality objectives in Amendment 13 to the Multispecies FMP. Two new concerns were also the effect of potentially higher yellowtail flounder catches in the scallop fishery on the hard TAC imposed by the US/CA sharing agreement, the effect on special groundfish access programs currently in development, and the seriously overfished status of SNE/MA yellowtail flounder stock.

16. Voluntary provisions to minimize bycatch for both access areas should be included in the framework adjustment.

These suggestions were included in the proposed action and relevant data to show bycatch hotspots will be circulated to industry when it is available. This is an issue that the industry could help by circulating informational bulletins to its members on ways that fishermen have identified to minimize bycatch, thereby extending the area access season as long as possible subject to the constraints on yellowtail flounder catches.

17. Prompt implementation of Framework Adjustment 16/39 is needed due to the following concerns: 1) impending bad weather [in the fall], 2) the deteriorating condition of scallops during the late summer through fall spawning period, and 3) the potential for crowding of the fleet into the access areas.

Although it is a very complex action that had lots of concerns and issues, the Council worked to finish the framework adjustment as expeditiously as possible, without compromising the analysis and evaluation of potential effects. Although implementation before the August 15 deadline in Amendment 10 is improbable, access to the areas should begin with sufficient time to allow fishing in the 2004 fishing year. In fact, the proposed access program is an expansion of the time that fishing was allowed in the 2000 fishing year, because both areas will be open at the same time. In contrast, the Nantucket Lightship Area was open for only six weeks, from August 15, 2000 to September 30, 2002, and Closed Area II was only open for eight weeks from June 15 to August 14, 2000. The trip allocations in the proposed action are no more than those allocated during the 2000 fishing year, but the access areas would be open to fishing for potentially 4½ to 5 months in the 2004 fishing year.

18. The framework adjustment should reconcile the habitat closure areas in the Sea Scallop and Multispecies FMPS.

This recommendation was considered and approved in the proposed action to improve protection of EFH and increase the practicability of using closures to protect EFH.

19. The implications of such a dual closure [the combined effects of the existing EFH closed areas in each plan] have never been analyzed, and they have not been subject of any practicability determination.

The combined effect of the dual EFH closures was estimated in the analysis of the status quo alternative for this framework adjustment. In the short-term (2004-2007), there would be marginal effects of the dual closure in the Nantucket Lightship Area and in Closed Area II, because scallops occur mainly in the areas that were open for access in the 2000 fishing year, which were unaffected by the EFH closures in the Multispecies FMP. The TACs for the access possible with the dual closures was about 2/3rds less than the preferred alternative, which had a substantial economic cost.

20. The imposition of dual closures on the scallopers alone would undermine its own sole logical foundation [that EFH closed areas need to apply to all bottom-tending mobile fishing gear to be effective].

The additional EFH closed areas in the Scallop FMP as revised by Amendment 10 would include areas that would be potentially open to other types of mobile fishing gear, although these areas are presently in areas that are closed to groundfish fishing. The analysis did not conclude that there would be no benefit of these additional closures, but that the practicability of the EFH closures would be enhanced with only a small or no decrease in EFH conservation.

21. Access boundary Alternative 4 should be approved because it expands access to the EFH boundaries in the Multispecies FMP, maximizing access while minimizing potential for groundfish bycatch in areas where scallops are presently in low abundance.

The Council agreed and included this alternative in the proposed action.

22. The ten-mile "buffer" zone around the HAPC for cod was not considered with adequate technical advice or public notice. The area furthermore overlaps a very significant scallop fishing area.

The Council rejected this alternative because it does not meet the purpose and need for this action.

23. The alternative mechanical rotation strategy should be approved because scallops in the Nantucket Lightship Area are becoming a depreciating asset with meat quality and weight falling as the scallops age, because it better balances fishing effort across the access areas, because it addresses concerns about the scallop resource in Closed Area II, and because it provides an appropriate level of access to the scallops in the Nantucket Lightship Area and Closed Area I.

The Council adopted this alternative for the proposed action for these reasons and because it had a lower probability for yellowtail flounder catches to exceed the TACs in each year of the proposed access program.

24. An $F=0.2$ fishing mortality target is preferable to the $F=0.4$ target for the Nantucket Lightship Area and Closed Area I, as proposed by Amendment 10, due to the severe implications that would be associated with very high short-term levels of fishing effort. Such a low rate may not be justifiable in the longer term, however.

The Council adopted a lower fishing mortality target for the Nantucket Lightship Area and Closed Area I because the areas would be open to scallop fishing for two of every three years, rather than one of every four, consistent with the time-averaged rotation area management policy that the Council adopted in Amendment 10. This action would produce a time-average fishing mortality target of 0.133, rather than the expected 0.1 according to the Amendment 10 schedule. In fact, this alternative raises the overall mortality target, but spreads the effort in each area out over two years rather than one. The Council will continue to evaluate the fishing mortality target to achieve optimum yield, but a target that is less than F_{\max} may be justified even in the long term to manage the effects of the fishery on the environment.

25. *The proposed mechanism for reducing the inequities in the allocation of access trips to part-time and occasional vessels should be approved and incorporated into the Mid-Atlantic area access management in 2005. Better mechanisms can be developed through a later framework adjustment, as part of access management in 2006 and 2007.*

This alternative was approved for the proposed action for this reason and because it would be clear what the scallop possession limit is according to permit category. Future framework actions may consider this allocation strategy in the context of scallop rotation area management under Amendment 10.

26. *Framework 16 needs to make sure that the deadline for the 2004 fishing year is three months after implementation of Framework Adjustment 16/39.*

This measure was included in the preferred alternative in Amendment 10 and addressed by the Council comments on the Amendment 10 proposed rule. The intent of the Amendment 10 alternative was to allow one-to-one exchanges for three months after their allocation to limited access vessels. This alternative was therefore unnecessary in Framework Adjustment 16.

27. *Framework Adjustment 16/39 should continue the research and observer set-aside program*

This alternative was approved in the proposed action.

28. *Limiting the access program in time pits actual negative impacts on scallop productivity, scallopers and scallop fishery managers against what is essentially a theoretical concern about the potential for increased bycatch in the spring. Should spring bycatch ratios prove to be high, perhaps because of yellowtail flounder aggregating on the scallop grounds, this issue could be promptly revisited [in the next biennial framework adjustment].*

The Council carefully considered these concerns against the problems that might occur by allowing fishing during peak groundfish spawning activity and the uncertainty in the bycatch projections outside the temporal range of observed scallop trips. In the final analysis, the Council preferred a more risk adverse approach that has less risk of increasing environmental effects and shutting down scallop fishing early in the year due to high groundfish bycatch. Although the effects on scallop yield and mortality are recognized, the costs did not outweigh the benefits of groundfish conservation at this early stage of rebuilding cod and SNE/MA yellowtail flounder through the Amendment 13 mortality controls. Later when stocks rebuild or the fleet demonstrates low bycatch in the expanded season under Framework Adjustment 16/39, future actions may consider expanding the season if the bycatch effects are acceptable.

29. *All access areas should be opened simultaneously in a particular year.*

The Council agreed that the sequential access that was applied in the 2000 fishing year is now unnecessary, due to the greater availability of sea samplers and better monitoring in the fishery.

30. Framework Adjustment 16/39 should not allow the use of scallop nets in the access areas, because it would drive yellowtail flounder bycatch to unacceptable levels, likely closing the access areas before other scallopers have made their allocated trips and hence promoting derby fishing. The scallop net fleet should have the option of using dredges within these access areas, without future penalties when returning to net fishing elsewhere. The Council should ensure that its management of the bycatch issue does not discourage trading, giving trawl vessels that cannot use dredges another option.

The Council agreed and analysis agrees with these recommendations and the proposed action would prevent scallop vessels from using trawls in the Georges Bank access areas. Vessels that customarily use scallop trawls may switch to dredges without penalty, or exchange trips to fish in the Hudson Canyon Area where scallop trawling is allowed. The proposed action furthermore includes alternatives (season limits, rotation schedule and mortality targets, adjustment procedure for the yellowtail flounder TAC, etc.) that reduce the risk of early closure due to yellowtail flounder bycatch and thereby increases the opportunity for vessels that exchange trips with trawl vessels to use them during the access season.

31. Additional gear restrictions for dredge boats in the access areas are unnecessary.

Analyses for these additional gear restrictions were not available to be included in the EA for this action.

32. Framework Adjustment 16/39 should include the special monitoring requirements that were implemented under Framework Adjustment 13. A level of coverage sufficient to achieve a CV=30% on the estimates of yellowtail flounder bycatch in each area is a good balance between precision and cost. It will be important, however, to distribute the costs and share the burden of the higher observer coverage among all access program participants. The Council and NMFS should ensure that all vessels participating in the access program are fit to carry observers and do carry them whenever selected by the observer program.

The proposed action includes the special monitoring requirements and the one percent TAC set-aside appears to be sufficient to achieve a 30% CV on yellowtail flounder bycatch estimates for each area. The target number of trips to be sampled would remain the same, whether an area closed early or not, which would mean that the sampling frequency would be higher than predicted (similar to what occurred in the 2000 access program).

33. The Council and NMFS should ensure that all vessels participating in the access program are fit to carry observers and do carry them whenever selected by the observer program.

The Council or NMFS cannot prohibit permitted scallop vessels from fishing in the access program, simply because the vessel is unfit to carry an observer. At the same time, NMFS cannot require observers to board an unfit vessel, but will do whatever is needed to try to spread out the observer coverage among vessels participating in the access program. If this is a significant problem, it would be an ideal issue to be tackled by the Council's advisory committee for the next framework adjustment.

34. Allowing an extra crewmember [on observed trips] could help shuck the two hundred or more extra pounds of scallops per day that must be landed to support the observer program.

Initial analyses of this potential solution by the industry advisors indicated that it would shorten the trip, but spread the profits out among more crewmembers. Adding an eighth crewmember would

therefore do little to relieve, and could even increase, the burden on the crew from observer costs. On the other hand, this issue is a business concern and could be resolved by industry. Other methods of splitting the scallop revenue or sharing trip costs could be established for observed trips, providing a more equitable split between the vessel owner and crew for the observer cost.

35. The Amendment 10 area access approach should, by itself, significantly reduce the potential for bycatch, by further reducing scallop dredge bottom time.

While the analyses corroborates the expected reduction in dredge bottom time, the actual bycatch results from the combined effect of the location and amount of fishing effort, with respect to the distribution and abundance of non-target species. As such, the Council was concerned about the potential effects on overfished groundfish species that might arise from allowing fishing by small mesh gears in the groundfish mortality closed areas. Based on the analysis and bycatch projections, the Council was concerned about the effects of scallop fishing in the groundfish closed areas, despite the reduction in bottom contact time predicted under area rotation and Amendment 10. Therefore additional measures to ensure that bycatch is below acceptable levels were needed to minimize the impacts on groundfish mortality and rebuilding under Amendment 13.

36. The Council must be careful of penalizing captains willing to work slowly and carefully to optimize scallop harvest while minimizing bycatch.

As indicated above, the proposed action includes several measures to reduce the probability for the access program to close when the yellowtail flounder catches reach the TACs. Primarily, these measures include changing the mechanical rotation strategy to smooth effort and scallop allocations over time, to maintain a season when observed groundfish catches have been low, to allow a procedure to increase the yellowtail flounder TAC if the total catches in all fisheries are unlikely to reach the Amendment 13 targets, and to allow vessels that are unable to take controlled access trips in open areas if the access areas close from high yellowtail flounder catches. Moreover, vessels will be allocated 12 DAS for each trip, but the expected scallop catch rate will enable most vessels to catch scallops in much less time, 6 to 8 days. Therefore, vessel captains should have ample opportunity to work slowly and carefully to optimize scallop harvest while minimizing bycatch.

37. The yellowtail flounder bycatch estimates contained in this year's analysis significantly overstate the potential for SNEX/MA yellowtail flounder bycatch.

The initial draft of the bycatch analysis that the Council reviewed at the January 2004 meeting contained an error which caused six Closed Area II trips to be assigned to the Nantucket Lightship Area. Since yellowtail flounder catches are typically higher in Closed Area II, this inflated the Nantucket Lightship Area bycatch projections. This error was corrected for the final framework meeting in February 2004 and the final analyses are correct.

38. The next best solution [to a soft or no TAC option] is to allocate area access trips (or an equivalent number of DAS) to the open area fishery if an access area closes for bycatch reasons.

Although it can reduce the expected benefits from the access program, this transfer provision has been included in the proposed action (Section 4.1.4.1), but the transfers will be limited to the amount of open area DAS that vessels would be assigned under the status quo alternative, which was analyzed in the Amendment 10 FSEIS.

39. Most vessels will have taken a comfortable majority, if not all, of their Georges Bank area access trips before any bycatch TAC is reached (if ever). A bycatch hard TAC closure represents a variant of the no-Georges Bank area access situation analyzed in Amendment 10.

The analysis agrees with this perception and projects that, for the proposed action, yellowtail flounder bycatch might exceed the 10% TAC limits by a small percentage. Thus if the catches are as expected, most area access trips will have been taken before it would be necessary to close the access program for the year. Nonetheless, a hard TAC is needed to ensure that catches will not exceed an acceptable level if the yellowtail flounder catch rates are higher than expected, based on projections using bycatch data from the 2000 fishery.

40. Framework Adjustment 16/39 should include the current 300 lb. aggregate groundfish possession limit for limited access scallopers on area access trips.

The projected catch rates are expected to exceed this amount and a reasonable increase in the limit would reduce bycatch without causing a change in fishing behavior to catch more groundfish. The proposed action therefore increases the aggregate possession limit to 1000 lbs./trip, in line with the expected catches when targeting scallops on area access trips.

41. A zero [cod] possession limit puts the owner (and the trip) at risk if the vessel happens to catch one fish that is consumed onboard, saved by a crewman [for personal use], or simply on deck during a Coast Guard boarding.

This was a very contentious issue, because of the extraordinary measures that are required by Amendment 13 to rebuild the Georges Bank cod stock. Nonetheless, the Council recognized the problem caused by a zero possession limit and the proposed action allows a vessel to retain cod up to 100 lbs./trip for personal use.

42. Framework Adjustment 16/39 should set aside sufficient poundage of scallops to provide every SAP trip with 400 lbs. to be taken out of the general category scallop TAC. The harvest of 400 lbs. of scallops per trip can cause no harm to the scallop resource while it will improve the economic viability of the groundfish operations without increasing stress on their own resources, and will somewhat reduce the discarding of scallops.

Special Access Programs in other fisheries with a bycatch of scallops was not the focus of the purpose and need for Framework Adjustment 16/39. Moreover, it is not known how much fishing will occur in these SAPs, or where or when fishing would occur. This type of alternative was therefore not considered in the framework adjustment and future SAPs in other fisheries should analyze the effect of such a measure.

Due to the relative price of scallops, targeting 400 lbs. of scallops can be a profitable behavior, especially when it is combined with other target species under a SAP. The Council will need to consider the effects of capping these catches and/or taking it out of an applicable area access TAC for the general category fishery. Unlike other species, discarding of sea scallops has fewer issues, because the discard mortality rate is usually low. Such a measure, if it is considered would not necessarily reduce bycatch (i.e. dead discards) by a significant fraction, especially for scallops captured in trawls.

43. Directed scallop fishing on 400 lb. trips is a deep concern, because of its long-term implications for the expansion of capacity in this open-access and largely unregulated sector. There is no recent historical basis for such general category scallop fishing, because it is forbidden in large areas of Georges Bank and elsewhere.

The analysis in the document corroborates this concern, but vessels with general category permits will face significant costs to fish in the access areas. These include VMS equipment to ensure compliance with the area access regulations, new dredge bags having 4-inch rings, and any vessel modifications to fish in these offshore areas. It remains to be seen how much of an incentive it will be for fishermen to jump into this open access fishery. It is possible that the biggest effect will be to keep limited access DAS vessels offshore, instead of working on more accessible inshore scallop areas that vessels with general category permits frequently target.

Finally, the fact that current regulations forbid scallop fishing by vessels not on a DAS in large areas of Georges Bank is internally inconsistent with the contention that there is no recent historical basis for the fishery. In fact, before Amendment 4 to the Scallop FMP and Amendment 5 to the Multispecies FMP, there were many vessels from the Cape Cod, MA area and coastal Maine that targeted scallops, but failed to qualify for a limited access scallop permit (many apparently for their inability to document landings).

44. A two-percent limit for the general category TAC is a fair and even generous allocation, which should set an upper limit on the number of 400-pound trips that can be taken in each access area.

These measures were included in the proposed action and any vessel with a general category scallop permit that meets the reporting and monitoring requirements will be able to take trips, until either the fleet takes all the trips that have been allocated, or the area closes to scallop fishing due to the bycatch considerations.

11.2 Written Comments

Written comments that the Council received before the first framework meeting in November 2003, at an interim meeting to identify alternatives at the January 2004, and at the final framework meeting in February 2004 are reproduced on the following pages.

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