## **New England Fishery Management Council**

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# FRAMEWORK ADJUSTMENT 13

to the

## ATLANTIC SEA SCALLOP FISHERY MANAGEMENT PLAN

with options for

## FRAMEWORK ADJUSTMENT 34

to the

# NORTHEAST MULTISPECIES FISHERY MANAGEMENT PLAN

To re-open portions of the Groundfish Closed Areas for scallop fishing

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

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Figure 23. Boundaries of areas considered by the Groundfish Oversight Committee for scallop fishing in 2000, showing the relationship to yellowtail flounder stock areas. In Closed Area I, the 43660 loran line is the southern boundary of the Habitat Committee's recommendations for the area to be considered. The shaded area, south of the 43660 line is the southern boundary for Alternative 1. The southern boundary for Alternative 2 is an east-west line at 41°07' N latitude, approximately at the same latitude as the middle of the 43660 loran line
Figure 24. Boundary of area for scallop fishing in Closed Area I for Alternative 3. The southern boundary, along a straight line along the 43660 loran line corresponds to the Habitat Committee's recommendation. The northern boundary of the area where scallop fishing would be allowed, corresponds with the boundary of Closed Area I. The chart also shows the location of the Right Whale Critical Habitat Area and the location where fishermen report prevalence of lobster gear60
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Figure 27. Relationship between day-at-sea tradeoffs, scallop trip limits, and number of allocated trips for
scallop fishing in Nantucket Lightship Area, Closed Area I, and Closed Area II. The stacking of the trips allocated is in the same order as the day-at-sea tradeoffs
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#### 2.0 INTRODUCTION

#### 2.1 Background

#### 2.1.1 Summary of Existing Closures

During December 1994, three large areas of Georges Bank (Figure 4) were closed via Emergency Action to all gear capable of catching groundfish. The Council requested this action by the Secretary of Commerce to protect the depleted groundfish stocks on Georges Bank. The Council followed this temporary action up with a permanent change to the Northeast Multispecies FMP via Framework Adjustment 9.

The basis for excluding scallop vessels from the groundfish closures was that they were "known to catch significant amounts of yellowtail flounder", and were "reported to have the ability to catch other groundfish when concentrated as for spawning, and that the dredge disturbs the bottom and disrupts the spawning activity." The Environmental Assessment for the Emergency Action estimated that the foregone scallop revenue was \$21.9 million for 725 scallop trips in the closed areas (Table 1). This economic impact was thought to overestimate the true impacts because of the "possibility that many scallop vessels may have recently redirected their efforts to areas in southern New England and the Mid-Atlantic region due to the severe condition of the scallop resource in the Georges Bank area."

Table 1. Foregone pounds and value for scallop vessels fishing in the groundfish closed areas. Source: Environmental Assessment for an Emergency Action to implement protective measures in the Northeast Multispecies Fishery prepared by NMFS-Gloucester; March 6, 1995.

Area	Foregone Landings (million lbs.)	Foregone Revenue (million dollars)	Trips affected
Closed Area I	1.1	4.5	126
Closed Area II	2.7	11.7	377
Nantucket Lightship Area	1.4	5.8	222
Total	5.2	21.9	725

NMFS closed two areas in the Mid-Atlantic via Emergency Action in response to a Council request to protect newly recruited scallops (Figure 5). This action was also taken because of the depleted resource conditions in the Mid-Atlantic and as a way to protect some areas where small scallops were abundant. The Council included this temporary closure in Amendment 7 to the Atlantic Sea Scallop FMP and it will last until March 1, 2000.

#### 2.1.2 Success of the Closed Area II scallop fishery during 1999.

Access to Closed Area II for vessels fishing for scallops was highly successful and realized the benefits predicted by Framework Adjustment 11 (NEFMC 1999a). At this time, 185 out of a potential 328 vessels with limited access scallop permits made 580 out of a potential 965 trips into Closed Area II to catch large scallops. As anticipated by Framework 11, trips averaged 6 days-at-sea, ranging from one to fourteen days (Figure 1). NMFS program to place observers on board scallop vessels in Closed Area II was highly successful and over 25 percent of the trips were observed (Table 3). (The final, 15-Nov-99 preliminary monitoring report from this program is included as Appendix 16.0 because it was available after this document was prepared for consideration by the Council, however, the results do not differ significantly from those reported here.)

During these trips, the vessels caught 5.3 million lbs. of scallops worth approximately \$32 million (Table 2). They also caught 746,000 lbs. of yellowtail flounder (Figure 3). The ratio of yellowtail flounder to scallop catch was 0.14 lbs. of flounder for each pound of scallops. This ratio is much lower than that predicted in Framework Adjustment 11, allowing the season to last longer than expected and allowing the allocation of three additional trips to 178 vessels that fished before the September 30, 1999 deadline to be eligible for a mid-season adjustment.

The mid-season adjustment appeared to have some unintended consequences, however. On October 12th, the NMFS Regional Office authorized these 178 vessels to make up to three additional trips to Closed Area II. After the announcement, fishing effort and yellowtail flounder bycatch shot up (Figure 2) and the fishery more rapidly approached the flounder TAC (Figure 3).

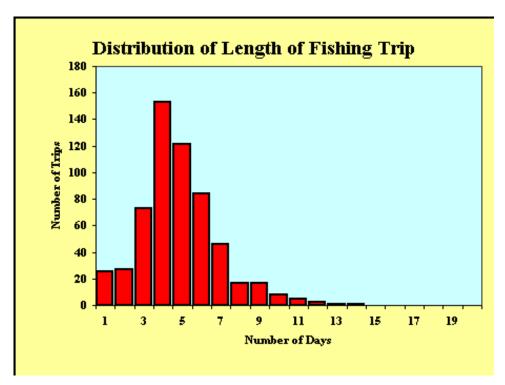
Seventy-three (73) vessels took advantage of the added opportunity in October 1999 (Table 3). Fifty-one (51) vessel made less than the three trips initially authorized by Framework Adjustment 11. In total, these vessels made 580 trips to Closed Area II and landed nearly 5.3 million lbs., about 9,200 lbs. of scallops per trip. Since each trip accumulated a minimum of 10 days, the trips in Closed Area II used up slightly more than 5,800 days-at-sea, or about 20 percent of the total annual allocation of days-at-sea. Since the average trip length was about six days, the program used 2,320 days that were not actually fished. The actual amount of fishing effort that the Closed Area II fishery removed from the open areas is unknown; it depends on what vessels entered Closed Area II to fish and whether they took advantage of unused days to fish. A more comprehensive analysis of the effects was analyzed in the 1999 SAFE report (NEFMC 1999b) and included in 6.2.6.

**Table 2.** Total allowable catch and status of the Closed Area II fishery as of October 27, 1999. Source: NMFS–http://www.nero.nmfs.gov/ro/doc/gb102799.htm.

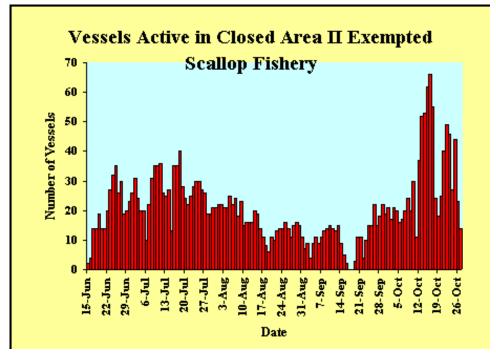
	Directed Scallop Fishery	Yellowtail Flounder Bycatch
	(meat weight)	(live weight)
Total Allowable Cotch (TAC)	9,384,812 lbs	853,165 lbs
Total Allowable Catch (TAC)	(4,257 mt)	(387 mt)
Total Catch to date	5,316,358	745,950
% of TAC	57%	87%

**Table 3.** Distribution of trips and vessel participation during the Closed Area II fishery from June 15, 1999 to October 27, 1999. Source: NMFS– http://www.nero.nmfs.gov/ro/doc/gb102799.htm.

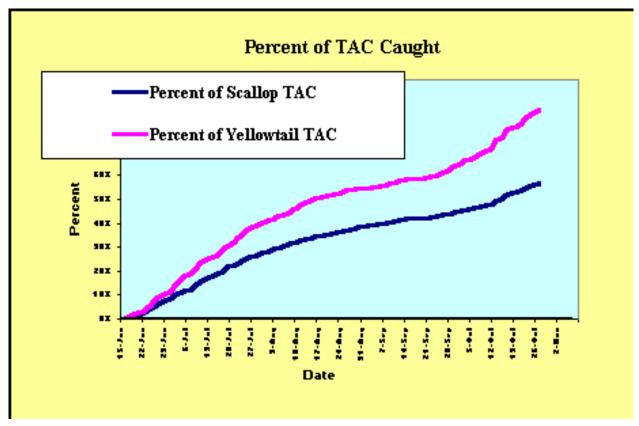
	Trips	Number of Vessels	
	1	25	
Number of Trips	2	26	
_	3	66	
	4	58	
	5	15	
	6	0	
<b>Total Number of Participating V</b>	al Number of Participating Vessels 190		
Number of Scallop Fishing Trips		580	
Percentage of Observed Trips 25.2		25.2%	



**Figure 1.** Trip length distribution for scallop fishing trips to Closed Area II, during June 15 to October 27, 1999. Source: NMFS – http://www.nero.nmfs.gov/ro/doc/gb102799.htm.



**Figure 2.** Daily vessel activity in Closed Area II from June 15 to October 27, 1999. Source: NMFS – http://www.nero.nmfs.gov/ro/doc/gb102799.htm.



**Figure 3.** Proportion of scallop and yellowtail flounder TACs caught by vessels fishing in Closed Area II between June 15 to October 27, 1999. Source: NMFS – http://www.nero.nmfs.gov/ro/doc/gb102799.htm.

#### 2.1.3 Meetings and Opportunity for Public Comment

Prior to and during the development of Framework Adjustment 13, the Council held the following meetings. This action initially began as part of the annual framework adjustment, i.e. Framework Adjustment 12. During the final meeting for Framework Adjustment 12 on November 17, 1999, after taking public comments and debate on issues related to access to the groundfish closed areas, several significant issue had not been satisfactorily evaluated by the Council's Oversight Committees. In lieu of postponing the annual framework adjustment, to increase the day-at-sea allocations to 120 days for full-time vessels, the Council postponed action on the access to closed areas and split those alternatives off into a new action. The initial meeting for Framework Adjustment 13 is therefore the September 22, 1999 Council meeting (see table below). The Council therefore also held two final meetings, on November 17, 1999 and January 20, 2000, to take public comment on the proposed access alternatives.

The meetings where access to the groundfish closed areas was a primary and specific agenda item are listed for completeness. Following the formal framework initiation by the Council in January, numerous Council committee, plan development team (PDT), advisory, and scientific meetings were held to discuss issues and concerns, to develop recommendations, and to specify management alternatives. These meetings are listed in the following table:

Prior to initiation of the framework adjustment – SAFE report and assessment meetings				
Date	Meeting			
October 17, 1997	Scallop and Groundfish Plan Development Teams			
May 20, 1999	Invertebrate Assessment Sub-committee			
June 2, 1999	Scallop Plan Development Team			
June 21-25, 1999	Stock Assessment Review Committee			
July 7-8, 1999	Scallop Plan Development Team			
July 29-30, 1999	Scallop Plan Development Team			
August 24, 1999	Scallop Plan Development Team			
September 16-17, 1999	Scientific and Statistical Committee			
Framework adjustment meetings				
Date	Meeting			
September 9, 1999	Scallop Advisory Committee			
September 10, 1999	Scallop Oversight Committee			
<b>September 22, 1999</b>	Initial Framework Meeting – Fairhaven, MA			
September 28-29, 1999	Scallop Oversight Committee			
October 6-7, 1999	Scallop Plan Development Team			
October 6, 1999	Habitat Technical Team			
October 18, 1999	Scallop Plan Development Team			
October 19, 1999	Habitat Oversight Committee			
November 8, 1999	Research Steering Committee			
November 10, 1999	Groundfish Oversight Committee			
November 12, 1999	Scallop Oversight Committee			
November 15, 1999	Gear Conflict Committee			
November 15, 1999	Enforcement Committee			
November 17, 1999	Final Framework Meeting – Gloucester, MA			
December 7-8, 2000	Groundfish Plan Development Team			
December 13, 1999	Groundfish Oversight Committee			
January 10-11, 2000	Scallop Oversight Committee			
January 14, 2000	Groundfish Oversight Committee			
January 20, 2000	Final Framework Meeting – Danvers, MA			

Consistent with the Council's framework adjustment procedures in the Atlantic Sea Scallop and the Northeast Multispecies FMPs, two formal framework meetings were also held. At regularly scheduled Council meetings, the initial meeting was September 22, 1999 in Fairhaven, MA and the final meeting was November 17, 1999 in Gloucester, MA. Due to unresolved issues at the November 17, 1999 meeting, the Council postponed final action on Framework Adjustment 13 until January 20, 2000. Notices and agendas for all three framework meetings, as well as all committee meetings, were published in the Federal Register and distributed to the Council's extensive interested party mailing list.

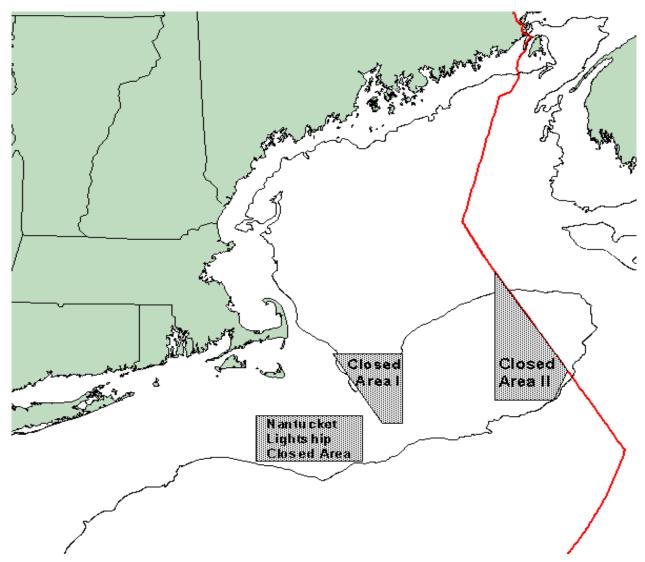


Figure 4. Location of groundfish closed areas closed to scallop vessels during December 1994.

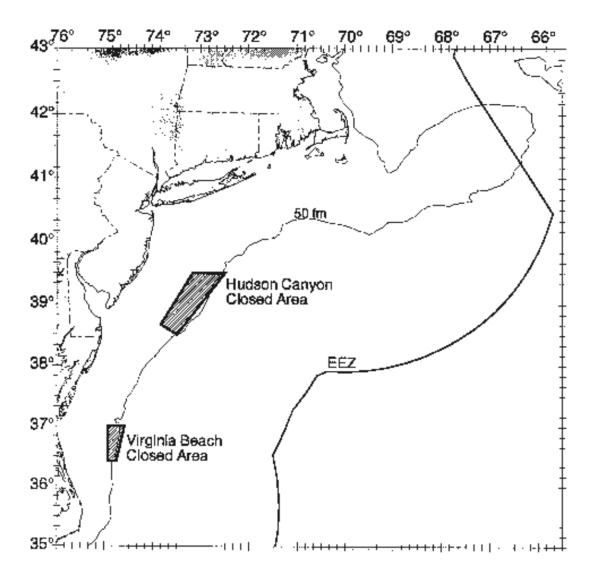


Figure 5. Location of scallop closed areas in the Mid-Atlantic closed during 1998 by emergency action.

#### 3.0 PURPOSE AND NEED

The purpose of this action is to allow the scallop fishery to benefit from the significant buildup of stock biomass that has occurred since the groundfish closed areas became off limits to scallop vessels. Between 1994 and 1998, scallop biomass in the three closed areas increased by 15-20 times. The biomass in Closed Area II increased by 8.5 times (Figure 6), while biomass in the other two groundfish closed areas increased by as much as 16 times. The scallop biomass is expected to increase another 19 percent in all three closed areas by August 2000, based on the size of scallops, growth, and natural mortality. This action is also intended to reduce fishing effort in other scallop areas where the stock is dominated by smaller scallops. Considerable fishing effort that now occurs in the open areas will shift to the re-opened closed areas, where scallop size is much larger. The net effect will be to reduce the number of scallops caught by the fishery and therefore reduce fishing mortality, promoting the rebuilding potential of the faster-growing small scallops.

A previous shift (related more to stock conditions than changing regulations) in scallop fishing effort to the Mid-Atlantic and large catches of yellowtail flounder that threaten rebuilding, reasons for the Council and the Secretary of Commerce to exclude scallop vessels from the Georges Bank closed areas, are less apropos to the present conditions. The scallop resource in the Mid-Atlantic is no longer attracting as much scallop fishing effort from Georges Bank. At that time, scallop biomass on Georges Bank was low and scallop biomass in the Mid-Atlantic was high due to strong recruitment in 1994. The strong Mid-Atlantic year class in 1994 is now gone (removed by high fishing effort) and biomass on Georges Bank has recovered to historically record levels. As a result, failure to access the groundfish closed areas would significantly increase costs by forcing scallop vessels to fish where scallop biomass is low and waste the opportunity to catch scallops where biomass is high. Fishermen are again reporting many small scallops in the Mid-Atlantic which are also at risk of heavy fishing pressure, unless some of the fishing effort can be transferred to areas of large scallops.

Similarly, the groundfish stocks on Georges Bank are recovering. Fishing mortality for yellowtail flounder, a groundfish stock especially vulnerable to scallop dredges, is well below the target set by Amendment 7 to the Multispecies FMP. According to the projections in the MSMC report (NEFMC 1999c), the 1998 catch of yellowtail flounder was 2,818 mt less than the catch associated with the Amendment 7 fishing mortality target in 2000. Yellowtail flounder are moreover projected to rebuild to  $B_{MSY}$  by 2002, even at the target fishing mortality rate.

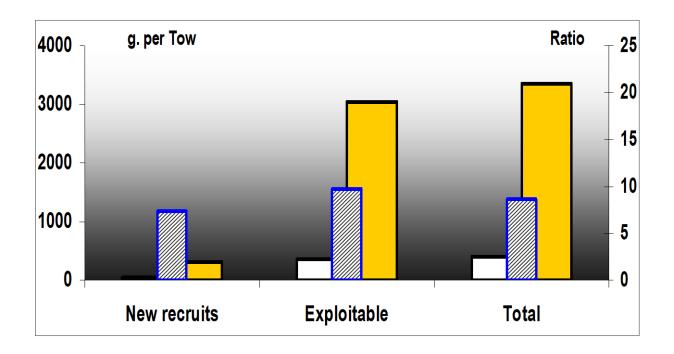


Figure 6. Change in biomass of recruits and exploitable scallops for Closed Area II from 1994 (left bar) and 1998 (right bar). The hatched bar indicates the ratio of the biomass in 1998 to the biomass in 1994. Recruitment increased about six times compared with 1994 while the biomass of exploitable scallops increased by 8.5 times.

#### 4.0 ISSUES OF CONCERN

#### 4.1 Sustainability

The goal the Council adopted in Amendment 7 to the Atlantic Sea Scallop FMP is to rebuild the resource to levels capable of producing maximum sustainable yield (MSY) and then fish the stock at a level that will produce MSY from that point forward. As of 1998, scallop biomass in the groundfish closed areas (Closed Area I, Closed Area II, and the Nantucket Lightship Area) has increased to 7.9 kg/tow, very close to the biomass target for the Georges Bank stock of 8.2 kg/tow (Figure 7). At the time of analysis, the 1999 survey data was not yet available for analysis, but projections of catch indicate that biomass continued to grow in 1999. Except for the southern half of Closed Area II, which has been fished near target levels in 1999, significant increases in biomass are expected. This projection has been corroborated by experimental fishery surveys in the Nantucket Lightship Area and Closed Area I during August and September of 1999. This latter data was analyzed for this framework action, however, more intensive analyses are continuing for the next stock assessment, scheduled for fall 2000.

In addition, there are four distinct year classes, ages 2 to 5, which are abundant due to the low fishing mortality since the closure. In contrast, the high scallop mortality in the open areas significantly reduces the abundance of 4-year-old scallops and 5-year-old scallops are nearly absent (Figure 8).

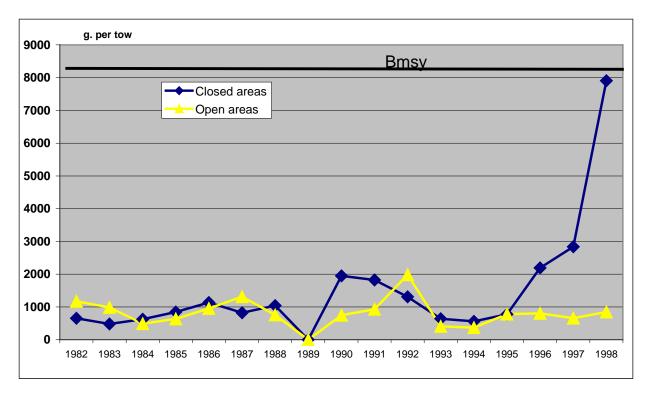


Figure 7. Mean meat weight per tow from the NMFS scallop survey (1982 to 1998), stratified into closed and open areas of Georges Bank.

Since the stock biomass in the closed areas is near MSY conditions, the Council's goal for the closed areas is to harvest scallops at a rate that will produce MSY, consistent with the overall goal for the total resource. Since growth and natural mortality for scallops in the closed areas appear to be similar to the estimates for the entire resource, the scallops should be fished at a level that will not exceed the overfishing threshold,  $F_{max}$ . The Overfishing Definition Review Panel recommended this reference point as a proxy for  $F_{MSY}$ . The exploitation pattern for the fishery where large scallops occur is unknown, so the value of  $F_{max}$  for the Georges Bank stock is appropriate. This value is 0.24, or about a 20 percent exploitation rate. If the fishery in the re-opened closed areas is able to avoid catching three-year old scallops (by changes in culling practices or through selective area closures), the value of  $F_{max}$  could increase.

Although the exploitation rate within portions of the three closed areas may by locally higher than  $F_{\text{max}}$ , scallops in the closed areas are considered to be one stock and therefore the exploitation rate on the stock will not exceed 20 percent. If only portions of the closed areas are re-opened by this action are available and the fishing mortality reaches  $F_{\text{max}}$ , it implies that more areas would have to re-open in future years to maintain a maximum sustainable yield from the closed areas.

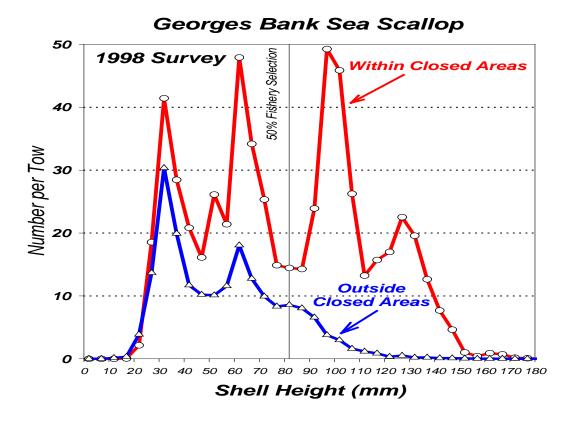


Figure 8. Size frequency of shell heights of scallops captured by the NMFS scallop survey in 1998, comparing the size distribution within the open areas to the size distribution in the three groundfish closed areas.

#### 4.2 Optimum yield

Optimum yield for scallops varies seasonally because of changes in the meat weight – shell height relationship and due to other factors, such as weather and market demand. Meat yield is cyclic and related to spawning activity. The maximum meat yield occurs in the spring and early summer (NEFMC 1999a), and then declines through the late summer and early autumn as scallops divert energy to spawning. Another factor to account for is weather, affecting the costs of scallop fishing especially when weather forces vessels to port on trips counted against day-at-sea limits. Imports tend to keep price relatively stable through the year (NEFMC 1999b), especially in markets where frozen product is an acceptable substitute.

These factors (high meat yield in the spring and early summer), weather (the threat of hurricanes and northeasters in late summer and early fall), and markets (preventing conditions that would oversupply

the market and push prices down) were taken into account by the Scallop PDT when it developed the area access recommendations. The relationship between the optimum time to fish for scallops, the potential for high bycatch, and gear conflict were compared for each area (Figure 10 to Figure 12). While avoiding bycatch appears to be an overriding priority, there are some yield losses that occur by fishing in the fall rather than the spring and summer. Since the fishing mortality targets and conservation neutrality are counted in terms of number of scallops caught, rather than weight, more landings and revenue could be generated during optimum seasons. Diverting effort from the fall when scallops spawn to the spring with the highest meat yields occur could also boost spawning activity, delay mortality to larger scallops, and improve yield-per-recruit.

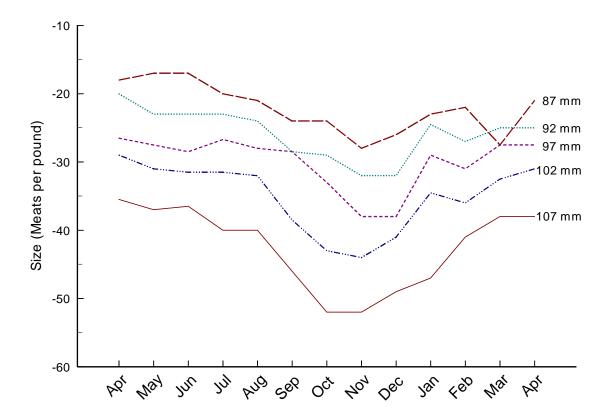
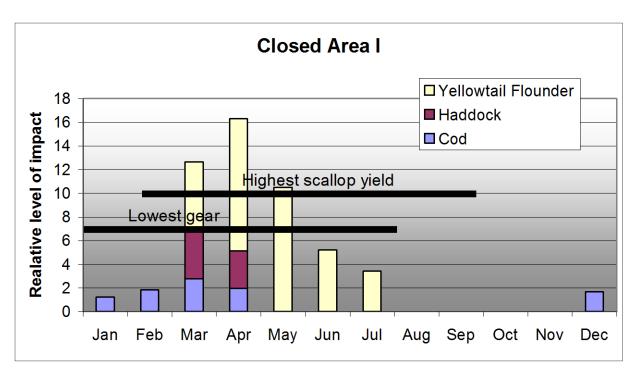
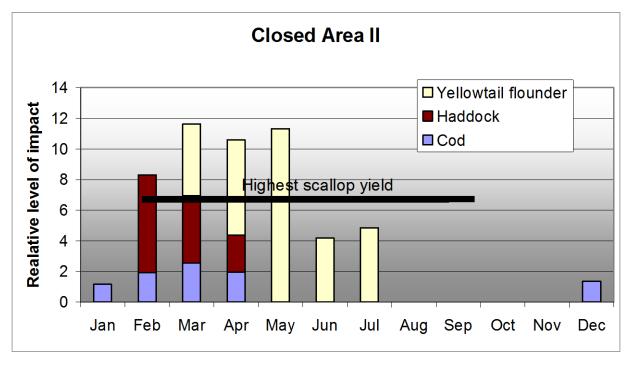


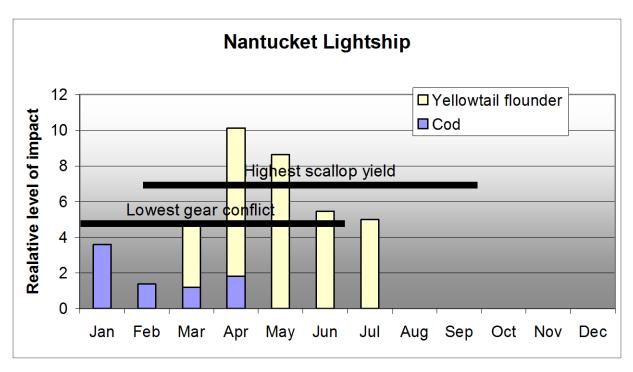
Figure 9. Seasonal change in meat weight for shell-heights ranging from 87 to 107 mm.



**Figure 10.** Seasonal relationship between scallop yield, gear conflict, and interactions with spawning and juvenile groundfish in Closed Area I.



**Figure 11.** Seasonal relationship between scallop yield, gear conflict, and interactions with spawning and juvenile groundfish in Closed Area II.



**Figure 12.** Seasonal relationship between scallop yield, gear conflict, and interactions with spawning and juvenile groundfish in Nantucket Lightship Area.

## 4.3 Conservation neutrality

The target fishing mortality rate for 2000 is 0.34. Conservation neutrality means that fishing mortality for the scallop resource should not rise above the annual mortality target set by Amendment 7 (NEFMC 1998). Also implied in the day-at-sea management system is that a day-at-sea is equivalent to some unit of fishing mortality. Since this action contemplates the fishery will catch larger scallops (Figure 13), it is anticipated that landings would increase but the number of scallops caught would remain the same or possibly decline.

The numbers of caught scallops for various options were calculated in Section 6.2.6.1.10, and the recommended minimum day-at-sea accumulation was estimated as the amount that would result in no net change. This methodology included in the estimate the decline in the number of small scallops harvested in the currently open areas because of the expected effort shift. Other factors and mechanisms that could affect total fishing mortality are explained below. One important factor, taken into account by the analysis, is the availability of unused day-at-sea allocations, by either active or inactive permits. An active permit is one in which a permitted vessel used one or more days-at-sea during the 1998 fishing year. The analysis is conservative in that it assumes that all eligible vessels will utilize unused days-atsea (including carry forward days estimated from the 1999 fishing year) to account for the accumulation of days-at-sea in the closed areas. In other words, the analysis assumes that vessels would reduce days-atsea in currently open areas only if they would run out of days-at-sea by continuing their 1999 fishing effort in the open areas. In Closed Area II, the vessels that actually participated in the 1999 fishery were assumed to fish in Closed Area II during 2000. Since there is no historical basis to estimate future participation in Closed Area I and the Nantucket Lightship Area, the analysis assumes that all eligible vessels will take the six allocated 10-day trips including active and inactive vessels. Confirmation of Permit Histories (CPH) were not included, although NEFMC (1999b) estimated that eight of the CPH

permits were activated during the 1999 fishing year. Any increase in CPH activation will be offset in these two areas by the less than 100 percent participation by inactive vessels with limited access scallop permits.

Production limits on board the vessel (i.e. shucking capacity) is expected to cut the actual time that fishing gear is on the bottom, compared with the fishing activity in the currently open areas where dredges usually catch fewer scallops than can be processed by the vessel and crew. This decreased fishing time is expected to reduce fishing mortality on the entire stock (inside and outside the closed areas), but the dense beds of scallops within the closed areas could increase dredge efficiency. The increase efficiency could translate into higher total fishing mortality on the stock if the total number of days actually used to fish remains the same. To counteract this potential change in efficiency, the framework adjustment includes a provision to accumulate more days-at-sea than those actually used when efficiency is high and the vessel reaches the trip limit in a short period of time.

Conservation neutrality with respect to scallop management with the 2000 fishing year day-at-sea allocations<sup>1</sup> means that the total number of scallops caught by limited access scallop vessels will not increase relative to the amount expected without groundfish closed area access (i.e. status quo). For the alternatives considered and rejected by the Council, the number of scallops caught would decline from two to five percent relative to status quo (Table 31). For the proposed action, the analysis (Section 6.2.6.1.10) estimates that the number of harvested scallops would decline from 827 million for the status quo to 817 million for the proposed action, a one-percent decline. Conservation neutrality is therefore achieved without a formal day-at-sea reduction or additional closed areas by shifting fishing effort onto larger scallops, by the vessel's production constraints (explained above), and by the day-at-sea accumulation (i.e. "tradeoff") relative to the amount of time estimated to catch and land 10,000 pounds of scallop meats.

<sup>.</sup> 

<sup>&</sup>lt;sup>1</sup> According to Framework Adjustment 12, a vessel with a full-time limited access scallop permit will receive 120 days plus up to 10 carry forward days to fish during the year beginning March 1, 2000.

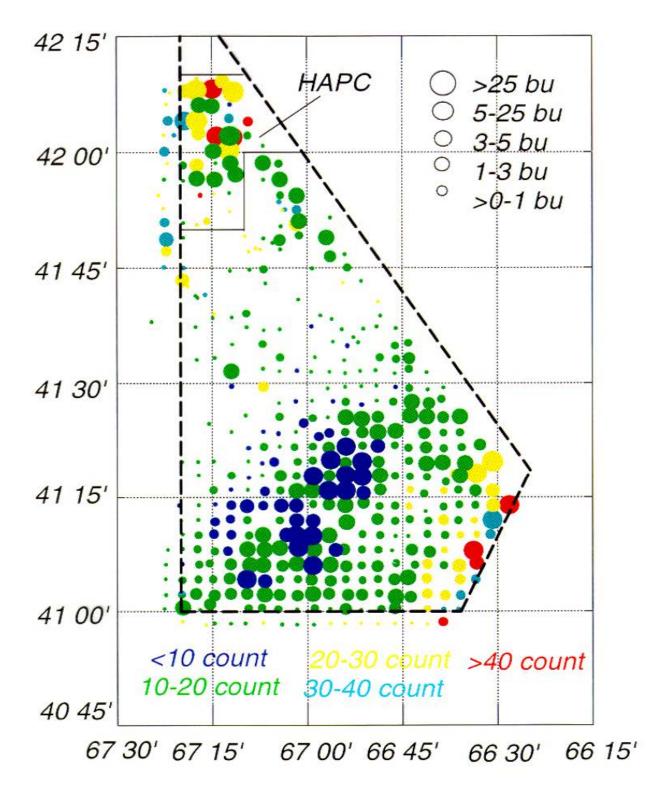


Figure 13. Distribution and volume of scallops of various meat counts captured by commercial vessels during the CMAST – Cooperative Industry experimental fishery in August to October 1998. [Graphics prepared and developed by the NEFSC, Population Dynamics Branch.]

#### 4.4 Stock rebuilding

The annual fishing mortality targets were set by Amendment 7 to rebuild the biomass to the FMP targets by 2008. As long as fishing mortality remains below the annual targets, the action will not jeopardize the Amendment 7 rebuilding program, especially if the fishery reduces its catch of small, fast growing scallops to target large, slow-growing scallops. The higher productivity of young scallops (at least in terms of growth) would promote rebuilding faster than if the closed areas did not re-open.

### 4.5 Groundfish bycatch and bycatch of other species

Many of the stocks of groundfish on Georges Bank are overfished and are being rebuilt by the actions taken under the Multispecies FMP. Although some rebuilding has occurred, most stocks have not yet approached  $B_{MSY}$ . Projections indicate that cod and haddock, two primary stocks managed by the Multispecies FMP, are well below the  $B_{MSY}$  targets and may decline unless recruitment increases soon. Yellowtail flounder, another primary stock, is projected to exceed  $B_{MSY}$  by 2000 if fished at or below target levels. Fortunately, cod and haddock are not very vulnerable to capture by scallop dredges, at least during the season proposed by this action. Allowing access to smaller portions of the groundfish closed areas could help to limit bycatch of finfish.

Other species of concern include winter flounder, summer flounder, and monkfish. Since the distribution of these stocks occurs largely outside the closed areas, the net impact of the shift in scallop fishing effort is uncertain. Another management measure that would help minimize the impacts is to increase the twine top mesh to allow more small fish to escape. Preliminary studies show that larger twine top diamond mesh significantly reduces the catch of flounders.

During the 1999 annual review, the Multispecies Monitoring Committee (MSMC) examined the access to groundfish closed areas by vessels fishing for scallops, in light of the groundfish target TAC recommendations for the 2000 fishing year. Increases in fishing mortality associated with scallop dredge bycatch, coupled with potential increases of groundfish fishing effort as stock recover, could push the total catch above the biological limits set by the Northeast Multispecies FMP. The committee recommended that bycatch be minimized to the extent practical and that access should be allowed only in ways that are conservation-neutral for important groundfish stocks.

In the 1999 report on the status of the resource, the MSMC made the following recommendations for the scallop access program:

"The MSMC recommends against increasing fishing mortality on Southern New England and Cape Cod yellowtail flounder. Any program to provide access to the Nantucket Lightship Closed Area and Closed Area I should be demonstrated as conservation neutral with respect to scallop vessel bycatch of these stocks. For Georges Bank yellowtail, the MSMC notes that the target TAC will approximately double from 1999 to 2000. It does not have a recommendation on what portion of that TAC should or could be allocated to the scallop vessels.

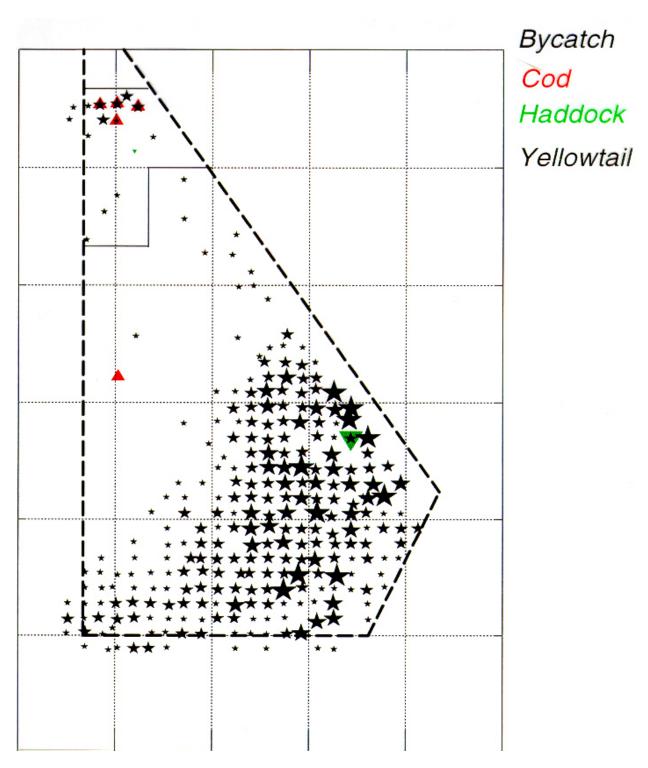


Figure 14. Distribution of cod, haddock, and yellowtail flounder catches in the CMAST – Cooperative Industry experimental scallop fishery during August to October 1998. The dashed lines show the outline of Closed Area II. The maximum number of fish per tow were cod – 2; haddock – 16; and yellowtail flounder – 253. The size of the markers is proportional to the number of fish observed in a standard 10-minute tow. [Graphics prepared and developed by the NEFSC, Population Dynamics Branch.]

"The MSMC recommends that any program to allow scallop vessel access be done with sufficient monitoring of bycatch to insure that fishing mortality does not increase. Since data on current bycatch levels outside the closed areas is limited or is non-existent, making the determination that catches are not increasing will be extremely difficult. The MSMC notes that information on fish distribution and bycatch in closed areas is based on limited sampling during narrow time periods. Information on the seasonal changes in the distribution of bycatch species is necessary before expanding any access program beyond the time periods observed in the experimental fisheries. Any program that provides access to closed areas should begin conservatively and include a mechanism for relaxing restrictions based on observed bycatch levels."

Section 6.2.6.1.8 analyzes the potential effects and based on Closed Area II policy, recommends a TAC for yellowtail flounder. The net impacts of the effort shift from open scallop areas into the groundfish closed areas has not been analyzed in detail, because it is impossible to predict with any certainty where the fishing effort in the closed area will originate from with respect to the distribution and vulnerability of all the groundfish stocks.

In lieu of this analytic problem, Framework Adjustment 13 includes a recommendation for a conservative yellowtail flounder TAC that continues the successful strategy applied to Closed Area II in 1999. The strategy for a yellowtail flounder TAC is conservative, even though yellowtail flounder catch in the open scallop fishing areas is not counted, because the monitoring program assumes that all yellowtail flounder bycatch is discarded dead, when in fact the discard mortality appears to be highly variable. The monitoring strategy also assumes that every captured fish has not already been caught one or more times (and counted) on another scallop vessel fishing in Closed Area II.

#### 4.6 Habitat impacts

The following issues were identified by the Essential Fish Habitat Technical Team, during the development of Framework Adjustment 11, to assist with evaluating methods to allow access to the closed areas for scallop fishing. The primary issues are framed in general terms, as questions to identify the information needed to evaluate and assess the likely habitat impacts from scallop fishing. While it is not expected that all the questions can be answered during the development of the Framework 11, identification of these issues now may help in the development of a data and information gathering process. Data gathered now and during implementation of the framework adjustment will be very valuable during the development of a later scallop area management amendment.

- 1. What habitat types within the current closed areas would be subject to opening?
- Different habitat types serve different ecological functions and are considered to have different functional values. Bottom types of higher complexity are generally believed to have higher functional value to the ecosystem than those of low complexity. More complex habitats generally exhibit some form of structure, either in the form of the bottom type itself (e.g., rock or boulder piles) or due to some biogenic structure associated with it (e.g., sponges, bryozoans, tunicates, mussel beds, clay pipes, etc.). The principal function provided by the structure associated with these complex habitats is predator avoidance, which increases the survival rate of demersal species (juveniles especially) and contributes to higher recruitment. Prey abundance may also be increased in areas of higher complexity and functional value.

- There are different impacts associated with different bottom types and the bottom types differ among the closed areas. The habitat impacts would be different if the scallop effort was concentrated in the gravel areas of the northern edge of Closed Area II compared to the relatively sandy areas of the central and southern portions of Closed Area II. The vulnerability of these two areas to disturbance from dredging activity differs considerably. For example, a recent meta-analysis of gear impact research found that the number of individuals in gravel areas was reduced by 48% following disturbance by bottom-tending mobile fishing gear, while the number of individuals in sand areas was only reduced by 5%. Similarly, the number of species present in gravel areas was reduced by 32%, while the number of species present in sand areas was reduced by 14%.
- The rates of habitat recovery from the disturbances associated with scallop fishing are another very important consideration. In general, high energy habitats (e.g., shallow areas with relatively strong currents and wave action) are thought to recover quicker than low energy habitats (e.g., deep areas with relatively mild currents and little wave action) because the biologic communities are adapted to those environments. The biologic communities in relatively low energy environments tend to be long-lived and slow-growing (e.g., corals and sponges). The communities that form the biogenic structure in these areas take a long time to recover and will only recover in the absence of disturbance. One of the problems is that we really do not know the recovery rates of many types of habitats. Current studies in the closed areas are making progress to this end, but the work needs to continue to quantify the recovery rates of many types of habitats.
- 2. What proportion of the current closed areas would be subject to opening?
- The frequency and intensity of gear use is one of the most significant factors in determining the magnitude of adverse impact. Per unit of effort, the frequency and intensity of scallop fishing will be higher if less area is available than if more area is available, as the allowed effort will be concentrated in smaller areas. If more area is open, however, more habitat will be subject to the adverse impacts associated with scallop fishing, so one cannot not presume that opening more area somehow minimizes the adverse impacts associated with scallop fishing.
- 3. How much effort would be allowed in the current closed areas?
- The effort that would be allowed in the closed areas could be controlled since both the number of vessels and the number of days-at-sea are currently regulated. The number of vessels and the days-at-sea they could use in the closed areas are important concerns in assessing the likely impacts associated with scallop vessel access to the closed areas. Fewer vessels fishing fewer days-at-sea will have less of an impact in the closed areas than more vessels fishing more days-at-sea.
- If some other mechanism is used to manage scallop access to the closed areas (e.g., trip limits, vessel quotas, TACs), some method must be developed to estimate the fishing effort that would be associated with this system. The likely habitat impacts of removing some amount of scallops cannot be analyzed without knowing the effort required to harvest that amount.
- 4. How does the amount of effort to be allowed in the closed area relate to dredge time on the bottom?
- It is presumed that, on average, one day-at-sea can equate to a certain number of tows of a certain length. The average length and number of tows per days-at-sea are important considerations in evaluating the likely impacts associated with scallop vessel access to the closed areas. If, for instance, each scallop vessel granted access is allowed five days-at-sea in the current closed areas,

and each days-at-sea can be equated to three tows of approximately one kilometer in length, this would be expected to contribute less adverse impact to the habitat of the closed areas than if each days-at-sea was equivalent to ten tows of approximately two kilometers in length.

- It is also important to remember, however, that the number of tows and the length of the tows will increase as more scallops are harvested.
- 5. What is the tradeoff (balance of effort) for access to the current closed areas?
- It is presumed that in order to gain access to the current closed areas for some number of days-at-sea, current scallop permit holders will have to give up some number of days-at-sea used outside of the current closed area. While this ratio will have no effect on the adverse impacts on the habitat within the closed areas, it could have an effect on the net adverse impacts on the habitat of the region, if it reduces the overall effort in the region. For instance, if there is a one-for-one tradeoff for days-at-sea in the closed areas compared to days-at-sea outside of the closed areas (i.e., a scallop vessel gets five days-at-sea in the closed areas and only loses five days-at-sea outside of the closed areas), then it is very unlikely that there would be any net benefit to the habitat of the region since there would not necessarily be any reduction of effort. If, on the other hand, a multiple of days-at-sea in the closed areas is used as a tradeoff (i.e., for every one of five days-at-sea within the closed areas, a scallop vessel gives up four or five days-at-sea outside the closed areas), then there may be a net benefit to the habitat of the region by reducing the overall effort of the scallop fleet.
- This is, however, a very difficult question to answer. Not only do we need to know the direct tradeoff, but we need to know the relationship between a days-at-sea outside of the closed area and dredge time on the bottom. In other words, if a days-at-sea within the closed areas equates to an average of three tows of approximately one kilometer of length, and a days-at-sea outside of the closed areas equates, on average, to ten tows of approximately three kilometers of length, and each days-at-sea used within the closed areas costs a scallop vessel four or five days-at-sea outside of the closed area, then we can begin to calculate an overall reduction of dredge time associated with access to the current closed areas. If this reduction of dredge time is significant, there may be a net benefit to the habitat of the region associated with the scallop management plan proposed.
- There is another component to this issue, however, involving the location and habitat type from where the effort shifting into the closed areas is coming. The above calculations tell us how much less effort would be used outside of the closed areas, but we also need to know where these effort reductions will occur. We then need to assess the relative value of the habitat that is likely to see a reduction in effort and compare that to the relative value of the habitat (within the closed areas) that will see an increase in effort. These habitats would need to be compared to determine if there would be any net benefit to the habitat of the region associated with the proposed scallop management measures. A decrease in effort in a large area may not offset an increase in effort in a small area if the functional value is not equal. At the same time, however, a reduction in effort in valuable areas of hard-bottom habitat may more than offset an increase in effort in areas of relatively sandy or soft-bottom habitat.
- It is important to remember that areas that may see an increase in effort (i.e., the current closed areas) currently face no impacts from bottom-tending mobile fishing gear, while the areas that would see a decrease in effort (from scallop fishing) would continue to face impacts associated with other types of bottom-tending mobile fishing gear (e.g., otter trawls). While it may be desirable to reduce effort in areas such as the Great South Channel, we would not be eliminating fishing effort in these areas.

- 6. What is the relative value of the habitat that is likely to face an increase of fishing pressure, compared to the habitat that is likely to see a decrease in fishing pressure?
- The relative "value" of habitats can be considered in a couple of different ways. Structurally, habitats of higher complexity are thought to be of higher relative value than habitats of lower complexity. Thus, areas with primarily gravel or boulder substrate would be considered to be of higher relative value than areas with primarily sand substrate. Another way to consider habitat value is to look at the number of species for which a given area has been designated as EFH. Some areas may be considered EFH for multiple species, while other areas may be considered EFH for only one, or no, species. Areas considered EFH for multiple species could be considered to be of higher relative value than areas considered EFH for fewer species. The relative value of these areas must be considered in determining the overall impacts associated with allowing scallop vessels access to the current closed areas. Any benefits to some habitats from a reduction in fishing effort may be offset by increases in fishing effort on habitats of relatively higher value.
- 7. What are the other components, if any, of the proposed scallop management plan that allows access to the current closed areas?
- If the proposed plan includes a system of rotational management or proposes to close other areas to scallop fishing, this system would have to be analyzed to determine the likely benefits or costs to the habitat of the region and specifically the habitat of the current closed areas compared to the habitat of the proposed closed areas. It may prove to be advantageous to protect some areas of high scallop abundance to serve as "seed" or "spawning" areas. Scallops are thought to be able to live up to 20 years, with increasing fertility as they age. Protecting some areas of high abundance, and therefore the habitat that supports these scallops, may promote higher levels of reproduction and recruitment.
- If, for instance, this proposal includes using a system of rotating temporary open areas surrounding a permanently closed area, we would examine the habitat of the areas proposed to be temporarily open compared to the area proposed to be permanently closed. The length of time that any one area would be considered open, compared to the length of time that it would be closed is also an important consideration in understanding the likely impacts to habitat from such a plan.
- If the proposal does not recommend any rotational area management system, but does recommend some areas be closed in return for access to the current closed areas, the relative value, amount, and status of the newly proposed closed areas must be determined for comparison with the habitat of the areas that will be opened.
- It is also important to remember that any new areas that might be proposed to be closed to scallop dragging would still face pressure from other forms of fishing, including other bottom-tending mobile fishing gears (e.g., otter trawls). So, in effect, an area that is currently closed to all forms of bottom-tending mobile fishing gear would be opened in return for closing some area(s) to only one type of bottom-tending mobile fishing gear. The habitat recovery observed in the current closed areas could not be expected to occur in new scallop management areas without a concomitant restriction of other fishing gears in the area.
- 8. What gear will be allowed in the current closed areas?
- Certain gear types may have less adverse impact on habitat than other gear types. For instance, a scallop dredge utilizing a light construction may have less of an adverse impact on habitat, per unit of

effort, than larger, heavier dredges that are designed to work on hard bottoms. It is important, therefore, to understand what gear types could be allowed in the closed areas. It may be preferable, from the perspective of minimizing the effects of fishing on habitat, to require the use of the light construction, or "tender", dredge inside the closed areas where the abundance of scallops and relatively soft bottom make this type of fishing gear practical.

• The relationship of the gear to the effort required to attain some level of landings is an important consideration in comparing gear types. For instance, dredge time on the bottom could be significantly higher for the light construction dredge than with the traditional dredge. Using the "tender" dredge may not present an overall benefit to the habitat of the area if the effort would be significantly higher to gain the same return. If, however, the effort is comparable across gear types, a light construction dredge may be preferable, as there would be less adverse impact overall associated with this gear type.

During the development of options for the annual adjustment in Framework 13, the habitat committee and advisors evaluated the proposals with respect to any new information that has come forward since Framework Adjustment 11. Specifically, this evaluation focused on access to Closed Area I since many of the issues related to access to Nantucket Lightship Area and Closed Area II had been addressed by Framework Adjustment 11. Their evaluation and recommendations are described in Section 6.2.6.2.

#### 4.7 Gear conflict

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**Figure 15.** Calendar year 1998 lobster landings (pots/traps only) by ten minute square (landings in pounds) (Source: NMFS VTR database)

#### 4.8 Compliance and enforcement

Opening portions of the three groundfish closed areas increases the opportunity to illegally enter the area to target groundfish or to avoid the rules (e.g. trip limits) for scallops to control the catches from the re-opened closed areas. This action, therefore, poses a potential threat to promoting groundfish rebuilding through closed areas and to ensuring that scallops are not over-exploited, depending on the management measures included in the framework adjustment.

Conversely, the Council can limit the potential for non-compliance and increased enforcement costs by a few simple management measures. Requiring all scallop vessels in the closed areas to use a VMS reduces the opportunity for them to make unauthorized trips into the closed areas to target scallops. A demarcation line, surrounding the closed areas, that defines where the Georges Bank scallop trip limit applies could also reduce the incentive to transfer scallops at sea, thereby avoiding the trip limit. Finally, any vessel in the re-opened closed areas could be subject to a trip limit (currently 300 pounds) that discourages targeting groundfish and is relatively easy to enforce.

#### 5.0 PROPOSED ALTERNATIVES AND QUALITATIVE IMPACTS

#### 5.1 Proposed Action

The framework adjustment proposes to temporarily open portions of the Nantucket Lightship Area, Closed Area I, and Closed Area II for a limited scallop fishery. The following sections describe the proposed action and the management measures that would apply to scallop fishing in portions of the groundfish closed areas.

Scallop vessels that are eligible to access the groundfish closed areas would be able to fish for scallops in portions of one or more groundfish closed areas. These areas, shown in Figure 4, were originally closed by the December 1994 Emergency Action to protect overfished groundfish stocks, including cod, haddock and yellowtail flounder. This action prevented the scallop fishery from accessing an historically important scallop resource area, including the Great South Channel and the Northern Edge and Peak. The latter resource area is open to the Canadian scallop fishery on the portion of Georges Bank within Canadian authority. During 1994, this was not a critical issue because of the low scallop abundance and biomass on Georges Bank. Scallop biomass has increased by 16 times the 1994 level, primarily in this favorable scallop habitat due to the near zero fishing mortality.

The management measures proposed for the closed area scallop fishery are defined by the scallop TAC (8,664 mt²) which determines the number of trips that may be allocated and the scallop possession limit for each trip, taking into account the number of vessels that would be eligible to participate. Since many eligible vessels are unlikely to participate, this is a risk-averse and adaptive approach. Underparticipation by eligible vessels could allow a mid-season adjustment to the trip allocation and the scallop possession limit, based on the number of vessels that actually participate.

The initial allocations are three trips for Closed Area II, two trips for Closed Area I, and one trip for the Nantucket Lightship Area. Full-time vessels would be able to take all six trips, since the automatic accumulation of days for the six closed area trips totals 60 days, less than the 120 day allocation for full-time scallop vessels during the 2000 fishing year. Part-time and occasional scallop vessels, on the other hand, do not have sufficient days (48 and 10, respectively) to take all six trips. Assuming that a scallop vessel has its initial day-at-sea allocations available to fish in the closed areas, a full-time vessel could therefore take up to five trips<sup>3</sup> in the three groundfish closed areas (up three in Closed Area II, two in Closed Area I, and one in the Nantucket Lightship Area as long as they total no more than four), plus have eight days remaining in the open areas. Occasional scallop vessels would be able to take only one trip (accumulating 10 days-at-sea) in any one of the three groundfish closed areas if the vessel elects to fish there instead of in the open areas. The initial scallop possession limit, to be in effect at least until adjusted by the Regional Administrator, will be equal in all areas to improve enforceability.

Each trip into a closed area will trigger the accumulation of a minimum number of days-at-sea against the vessel's allocation, regardless of trip length. If the trip lasts longer than the day-at-sea tradeoff, due to distance from port, the actual number of days-at-sea will accumulate. If the vessel leaves these areas during a closed area trip, it may not return or continue fishing in other areas. This higher rate

<sup>&</sup>lt;sup>2</sup> This value includes the two-percent TAC set aside for funding observers and research and the five-percent set-aside for landings by general category scallop vessels, but excludes the one-percent supplement to fund observers.

<sup>3</sup> On March 1, 2000, a part-time scallop vessel has the potential to receive a 58 day-at-sea allocation; 48 days for the 2000 fishing year plus up to 10 unused days-at-sea carried forward from the 1999 fishing year.

of day-at-sea accumulation is a conservation measure to ensure that the program is conservation neutral and achieves the objective of shifting fishing effort from areas with small scallops (in currently open areas) to areas with large scallops (in currently closed areas).

A second TAC will ensure that the proposed action does not jeopardize the approved rebuilding schedule for yellowtail flounder. The scallop catch and yellowtail flounder bycatch will be closely monitored and the proposed action authorizes the Regional Administrator to suspend the closed area scallop fishery if the yellowtail flounder TAC will be exceeded.

Other measures are proposed to ensure compliance with the proposed action, promote monitoring of the fishery, and ease the law enforcement burden. A very important part of the proposed action is a scallop TAC set aside to provide funds for the high level of observer coverage required to monitor the fishery and for funding innovative research during the closed area fishery.

The management measures contained in the proposed action are described in Sections 5.1.1 to 5.1.13 and summarized in the table below. During the development of Framework Adjustments 13 and 34, the Council considered alternatives and options for the measures that were approved. The rejected alternatives and options are described in Section 0.

Table 4. Summary of management measures in the proposed action.

Eligibility	All limited access scallop permits are eligible General category scallop permits are eligible to fish under a scallop TAC set-aside program Net boats must use dredges, but may continue to use nets in other areas	Section 5.1.7
Total Allowable Catch for Scallops and Yellowtail Flounder	<ul> <li>19.1 million lbs. scallop TAC</li> <li>1% set aside and 1% supplement to fund observers; 1% set aside to fund research</li> <li>725 mt Georges Bank and Cape Cod yellowtail flounder TAC</li> <li>50 mt Southern New England yellowtail flounder TAC</li> </ul>	Sections 5.1.3.1 to 5.1.4
Season	Nantucket Lightship Area: August 15 to September 30 Closed Area I: October 1 to December 31 Closed Area II: June 15 to August 14 Season will be suspended when the yellowtail flounder bycatch TAC is exceeded	Section 5.1.1
Area restriction	Northeast corner of Nantucket Lightship Area Central part of Closed Area I South of 41°30' N latitude for Closed Area II	Section 5.1.1
Scallop Buffer Zone	None.	Section 5.1.2
Gear restrictions for access to the groundfish closed areas	Limited access scallop vessels: dredges with a combined width of no more than 31 feet and with 10-inch mesh twine tops  General category scallop vessels: one dredge no more than 10.5 feet in width and with 10-inch mesh twine tops	Section 5.1.8
Effort limits	One trip for full and part-time vessels in Nantucket Lightship Area; two trips in Closed Area I; and three trips in Closed Area II Additional allocations of trips possible through in-season	Section 5.1.6

	adjustments for the Nantucket Lightship Area and Closed				
	Area I only				
	Each closed area trip accumulates 10 days-at-sea				
Scallop possession limit	10,000 pounds of scallop meats for limited access vessels 400 pounds of scallop meats for general category scallop vessels 50 US bushels of shell stock	Section 5.1.9			
Possession limits for bycatch	1,000 pounds of regulated multispecies for limited access vessels No possession of regulated multispecies for general category scallop vessels	Sections 5.1.9.4 and 5.1.9.5			
Reporting requirements	Vessels must have an operational VMS onboard and all vessels will be polled on average two times per hour.  Vessels will be required to make daily reports of catch and/or effort via email messaging  Vessels must make vessel trip reports and may be required to submit supplementary data	Section 5.1.11			
Observer coverage	Goal to sample 25 percent of closed area trips for all trips in each area made by limited access and general category scallop vessels  Vessels may be required to pay for observer costs through authorized increases in scallop landings	Section 5.1.12			
TAC set aside for research	Additional scallop landings to fund authorized research projects	Sections 5.1.3.2.1 and 5.1.13			
Enforcement provisions	Activation code added to VMS program  Vessels will be required to declare its intention to fish on a closed area trip prior to departure  Vessels may not re-enter a groundfish closed area where scallop fishing is permitted once it has exited the area  Vessels may not fish in other areas on a closed area trips  Landings must be unloaded at a single location	Section 5.1.10			

The annual framework adjustment proposes to make two changes to the FMP and achieve the plan objectives and Amendment 7 targets. The first change is to adjust the day-at-sea allocations to meet the Amendment 7 fishing mortality targets. Three options are proposed: 1) increase day-at-sea allocations to 1998 levels (142 for full-time vessels), 2) increase day-at-sea allocations to 1999 levels (i.e. no decrease from the 120 days-at-sea now allocated to full-time vessels) and 3) the status quo (51 days-at-sea allocated to full-time vessels). The second change is to continue and/or expand scallop access to the groundfish closed areas, where scallop biomass has rebuilt, to increase net benefits and boost rebuilding in the open areas through effort shifts into the groundfish closed areas.

The annual SAFE report (NEFMC 1999b) reported that the Amendment 7 fishing mortality targets were still expected to achieve the biomass targets during the rebuilding schedule. In fact, favorable recruitment and the effect of closed areas have improved the prospects for rebuilding, making it more consistent with the overfishing control rule for the Georges Bank and Mid-Atlantic stocks. Instead of rebuilding in 10 years, as Amendment 7 was meant to achieve, more recent biomass projections indicate that rebuilding is now possible in five to six years from implementation of Amendment 7. This

assumes median recruitment is realized in 2000 to 2004. Thus, no changes to the Amendment 7 fishing mortality schedule are necessary to meet plan objectives.

New analyses in the SAFE report, however, show that area closures have been effective at reducing mortality, improving the effectiveness of day-at-sea controls. This analysis was revised in Framework Adjustment 12 to address technical concerns raised by the Council's Scientific and Statistics Committee and others. It shows that the closed areas help to achieve the mortality goals, since nearly 80 percent of scallop biomass (somewhat lower abundance) is not fished.

With this amount of the scallop resource under protection via area closures, the analysis indicates that increasing the day-at-sea allocations from the scheduled 51 days is possible without jeopardizing the biological objectives of the plan. This prediction, however, assumes that access to closed areas is truly conservation-neutral and day-at-sea use does not increase above projected levels, based on 1998 day-at-sea activities. There are also considerable uncertainty about the estimates and the data that the model uses, factors for the Council to consider when setting the day-at-sea allocations for 2000.

5.1.1 Area access boundaries and seasons for Nantucket Lightship Area, Closed Area I, and Closed Area II (Framework Adjustments 13 and 34)

## 5.1.1.1 Closed Area II: June 15, 2000 to August 14, 2000 with Alternative 1 boundaries

Scallop vessels that are eligible to access the closed area(s) would be able to fish south of 41°30'. North latitude within Closed Area II. The shaded area in the southern portion of Closed Area II in Figure 21 represents the portion where scalloping would be permitted. Additional detail showing scallop distribution and average size at each station is shown in Figure 13 and described by longitude and latitude in Table 5. Vessels with general category permits are ineligible (see Section 5.1.7.3) to fish for scallops in Closed Area II.

Vessels with limited access scallop permits (Section 5.2.10) would be eligible to fish for as many as three trips (Section 5.2.6) in Closed Area II from June 15, 2000 to August 14, 2000, or until the catch exceeds either the scallop or yellowtail flounder TAC, whichever comes first. All trips must end before August 15, 2000 and no additional trips will be allocated, even if the catch is expected to fall short of the TACs.

Table 5. Boundary of the portion of Closed Area II for scallop fishing during June 15, 2000 to August 14, 2000.

Point label <sup>4</sup>	North latitude	West longitude
CII1	41°00'	67°20'
CII2	41°00'	66°35.8'
G5	41°18.6'	66°24.8' (US/Can)
SC1	41°30'	66°34.8 (US/Can)
SC2	41°30'	67°20'
CII1	41°00'	67°20'

<sup>&</sup>lt;sup>4</sup> Only points SC1 and SC2 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of Closed Area II and the HAPC.

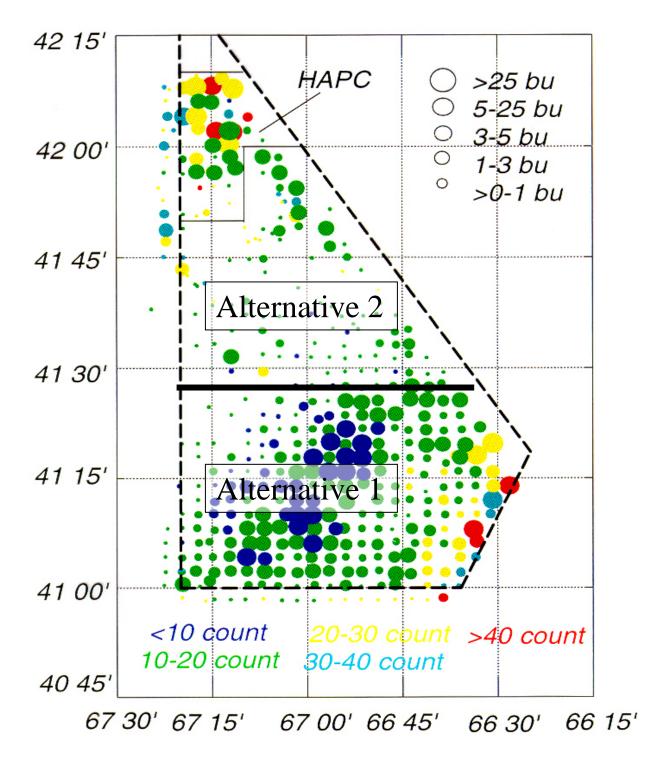


Figure 16. Distribution and volume of scallops of various meat counts captured by commercial vessels during the CMAST – Cooperative Industry experimental fishery in August to October 1998. Alternative 1 is all areas south of 41°30' N latitude and Alternative 2 is all areas south of the HAPC boundary, including the areas for Alternative 1. [Graphics prepared and developed by the NEFSC, Population Dynamics Branch.]

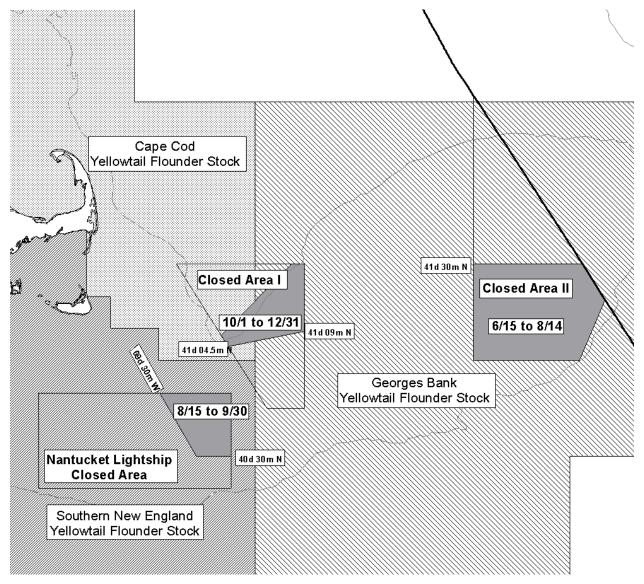
**Rationale:** This option was recommended by the Council's Habitat Committee in 1999 to avoid damage to fragile sand ridges that provide protection for juvenile finfish. Some of these sensitive areas occur outside the Habitat Area of Particular Concern (HAPC) and north of 41°30' North latitude. During the 1998 experimental fishery, the average catch of scallops during the experimental fishery within the boundaries of this option was 26 lbs. of scallop meats per 10-minute tow, with an average meat count of 18 scallop meats per pound. The average catch of yellowtail flounder was 23 pounds. For every 10 pounds of scallops, there were 8.8 pounds of yellowtail flounder caught during the experimental fishery within the boundaries of this option.

The present season and boundaries appear to be working well, but the PDT notes that the present method of removing 20 percent of the Closed Area II stock biomass from only the southern portion is an unsustainable policy. Besides the unsustainability of the present policy for setting the TAC while allowing access to only a portion (about half of the total biomass) of the resource area, the PDT also noted that a 20 percent exploitation rate is not risk-averse since this is the threshold mortality rate associated with MSY and there is considerable uncertainty in the  $F_{\rm MSY}$  value and the biomass estimates.

Although the Scallop PDT recommended a season for Closed Area II from June 15 to December 31, complicated enforcement and monitoring requirements prevent this area from opening at the same time as Closed Area I and the Nantucket Lightship Area. Concerns over monitoring the yellowtail flounder TAC in Closed Area I and the Nantucket Lightship Area prompted the Council's Groundfish Oversight Committee to recommend that no two areas be open to scallop fishing at the same time. Multiple demands could overwhelm the system if it tended to concentrate the trips in time and spread them out geographically.

Due to these concerns, the Council shortened the season (compared to the access program in 1999) to mid-summer. The Council chose this season to avoid concentrating fishing effort in an offshore area when weather tends to be less favorable and there is a greater risk to safety. Another factor was the increased bycatch rates of yellowtail flounder during late September and October. The data in 1999 showed that yellowtail flounder bycatch was generally low throughout the summer months and increased either due to seasonality or due to changes in fishing patterns as the fishery neared the yellowtail flounder TAC.

Even though significant scallop biomass would not be accessible in 2000, the Council chose to limit scallop fishing to areas south of 41°30' N latitude. Subsequent evaluation by the Habitat Technical Team indicated that there were fewer concerns about the effect on sand ripples and waves, but the main concentration of scallops located southeast of the HAPC (Figure 13) are in areas where hard bottom is found. Many scallops in the HAPC are also found in association with hard bottom. Some of these scallops are near hard bottom, but may be in sandy areas where dredging might be conducted without damage to sensitive areas. Collection and analysis of habitat and scallop concentration in more detail might allow future access in small, well-defined areas. Due to this association with hard bottom and insufficient data, the Council chose to not allow scallop fishing in the northern half of Closed Area II at this time.



**Figure 17.** Proposed scallop access boundaries and seasons for the Nantucket Lightship Area, Closed Area I, and Closed Area II. Dark shading represents areas where scallop fishing would be permitted during each season. Larger areas with hatched patterns represent different stock areas for yellowtail flounder.

# 5.1.1.2 Nantucket Lightship Area: August 15, 2000 to September 30, 2000 with Alternative 1 boundaries

Scallop vessels eligible to access the closed area(s) would be able to fish in the Nantucket Lightship Area within the boundaries described in Table 6. The shaded area in the northeast corner of the Nantucket Lightship Area in Figure 21 represents the portion where scalloping would be permitted. Vessels with limited access scallop permits (Section 5.1.7.1) would be eligible to fish for one trip (Section 5.1.6.1) in the Nantucket Lightship Area from August 15 to September 30, 2001; or whenever the catch

exceeds either the scallop or yellowtail flounder TAC, whichever comes first. Vessels with general category permits are eligible (see Section 5.1.7.3) to fish for scallops in the Nantucket Lightship Area while it is open to limited access scallop vessels and as long as the scallop landings do not exceed the five-percent TAC set-aside (Section 5.1.3.2.3).

If the scallop and yellowtail flounder catch is less than the scallop and yellowtail flounder TAC for the Nantucket Lightship Area, the Regional Administrator may allocate additional trips for eligible vessels to fish in the Nantucket Lightship Area from January 1 to January 31, 2001. Unlike the Closed Area II access program in 1999, vessels do not have to fish in the Nantucket Lightship Area from August 15 to September 30, 2000 to be eligible for additional trips.

Table 6. Proposed northeastern area of the Nantucket Lightship Area to re-open for scallop fishing from August 15 to September 30.

Point	Latitude	Longitude
label <sup>5</sup>		
G10	40°50'N	69°00'W
SC7	40°30'N	69°00'W
SC8	40°30'N	69°14.5'W
SC9	40°50'N	69°29'W
G10	40°50'N	69°00'W

**Rationale:** The PDT agreed that the best area option was the one considered for Framework Adjustment 11, since the gear conflict and habitat issues had been addressed when this boundary was developed. The boundary is shown in the figure above and in the table below. Considering the potential bycatch impacts, especially for Southern New England yellowtail flounder, and the effects on the scallop fishery, the PDT recommended allowing access for scallop fishing during August 1 to February 28. This season appeared to have the potential for some interaction with cod, but the PDT felt that this was preferable to greater bycatch impacts on yellowtail flounder while still minimizing the overlap (potentially causing market interruptions) with seasons in Closed Areas I and II.

The proposed area overlaps the one surveyed by the CMAST photographic survey in 1999 (Figure 26) and avoids areas with barndoor skates (Appendix II). About 80 percent of the scallop biomass within the surveyed portions of Nantucket Lightship Area during 1999 was within the proposed area (Table 21). Thus access to the proposed area is expected to produce the highest yield to the nation, while minimizing the area impacted by dredging. This area appears to have little interaction with important fish habitat locations (Section 6.2.6.2) and areas where there would be gear conflict with the lobster fishery (Figure 17).

The Council chose a shorter season to avoid overlapping seasons for access to Closed Area I and Closed Area II, for the reasons given in Section 5.1.1.1. Taking into account the concerns in the Nantucket Lightship Area and the relatively poor condition and low TAC for the Southern New England yellowtail flounder stock, the Council decided to concentrate the fishing effort in Nantucket Lightship Area to a season when there were few yellowtail flounder caught in 1999 experimental fishery. If the conditions in the experimental fishery persist into 2000, the short season could allow the scallop fishery to harvest the maximum amount of scallops prior the fishery reaching the low 50 mt yellowtail flounder

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<sup>&</sup>lt;sup>5</sup> Only points SC7 to SC9 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of the Nantucket Lightship Area.

TAC. Although there is considerable uncertainty, the analysis based on the 1999 experimental fishery indicates that the fishery would have a bycatch of 12 mt of yellowtail flounder with the one-trip initial allocation.

### 5.1.1.3 Closed Area I: October 1, 2000 to December 31, 2000

Scallop vessels eligible to access the closed area would be able to fish in Closed Area I within the boundaries described in Table 7. The shaded area in the center of Closed Area I in Figure 21 represents the portion where scalloping would be permitted. Vessels with limited access scallop permits (Section 5.1.7.1) would be eligible to fish for two trips (Section 5.1.6.1) in Closed Area I from October 1 to December 31, 2001; or until the catch exceeds either the scallop or yellowtail flounder TAC (Section 5.1.4), whichever comes first. Vessels with general category permits are eligible (see Section 5.1.7.3) to fish for scallops in the Closed Area I while it is open to limited access scallop vessels and as long as the scallop landings do not exceed the five-percent TAC set-aside (Section 5.1.3.2.3).

If the scallop and yellowtail flounder catch is less than the scallop and yellowtail flounder TAC<sup>6</sup> for Closed Area I, the Regional Administrator may allocate additional trips for eligible vessels to fish in the Closed Area I. The Regional Administrator will also have the discretion to extend the open season for Closed Area I through January 31, 2001 to allow vessels to take the additional trips. Unlike the Closed Area II access program in 1999, vessels do not have to fish in Closed Area I from October 1 and December 31, 2000 to be eligible for additional trips.

Table 7.	Proposed boundar	v of the port	tion of Closed	Area I for	scallon fishing.
1 400 10 7 1	110000000000000000000000000000000000000	, or the port			o com o p moning.

Point label <sup>7</sup>	North latitude	West longitude
SC3	41°04.5'	Western boundary of CA1
SC4	41°09'	Eastern boundary of CA1
Cl4	41°30'	68°30'
SC5	41°30'	68°35'
SC6	41°08'	Western boundary of CA1
SC3	41°04.5'	Western boundary of CA1

**Rationale**: The Council retained the northern boundary, recommended by the Scallop PDT, due to uncertainty about the scallop biomass and in the potential for groundfish and monkfish bycatch in the northwestern part of Closed Area I. Except for the shallow areas on the western edge of Closed Area I, the excluded portion of Closed Area I was not surveyed by the experimental fishery and few annual research survey samples are conducted there.

The Council modified the southern boundary of non-preferred alternative 2 to define the southern boundary of the access area in Closed Area I. Alternative 1 (Section 5.2.1.2.1), having a more southerly

<sup>&</sup>lt;sup>6</sup> As explained in Section 6.2.6.1.9, the yellowtail flounder TAC for Closed Area I is combined with the TAC for Closed Area II, since much of the area falls within the boundary of the Georges Bank yellowtail flounder stock area (Figure 21). This TAC also includes a target TAC for Cape Cod yellowtail flounder that are caught within a portion of Closed Area I. When deciding whether to allocate additional trips for Closed Area I, the Regional Administrator should include the bycatch of yellowtail flounder in Closed Area II during June 15 to August 14 in determining whether the additional trips would exceed the yellowtail flounder TAC.

<sup>&</sup>lt;sup>7</sup> Only points SC3 to SC6 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of Closed Area I.

boundary would allow scallop fishing to overlap some areas that the USGS side-scan survey identified as hard bottom and complex habitat. Although there are significant amounts of scallop biomass between 41°N and the southern boundary in the proposed action, the Council preferred the more northerly option (Alternative 2 vs. Alternative 1) because it would protect more sensitive habitat while still allowing the scallop vessels to fish on abundant concentrations of scallops.

Although law enforcement and monitoring would be simplified by a southern boundary along a line of latitude, the proposed action approximates a boundary described by the 13660 loran line. Familiar to fishermen, the boundary for the proposed action should improve compliance. The sensitive habitat, moreover, extends further to the north on the east side of Closed Area I than on the western side. The revised southern boundary therefore is expected to increase compliance while protecting more habitat.

The Council chose a shorter season to avoid overlapping seasons for access to the Nantucket Lightship Area and Closed Area II, for the reasons given in Section 5.1.1.1. Taking into account the concerns about enforcing the scallop trip limit and monitoring the yellowtail flounder TAC, the Council chose a non-overlapping season, following the open periods for Closed Area II and the Nantucket Lightship Area, respectively.

This order also allows for a continuous extension of the season in Closed Area I through January 31, 2001 if the catch does not exceed the scallop TAC for Closed Area I or the Georges Bank yellowtail flounder TAC. The latter TAC applies to both Closed Area I and Closed Area II. Since additional allocation of trips is unlikely in Closed Area II<sup>8</sup> and this is a second year of fishing the resource there, a continuation of the scallop fishery in Closed Area I is more likely and would produce a higher benefit provided the bycatch is less than Georges Bank yellowtail flounder TAC that applies to both areas.

### 5.1.2 No buffer zones or internal no-fish areas: Alternative 3 (Frameworks 13 and 34)

There will be no external buffer zones where the closed area scallop fishing rules apply and no separation zones where vessels cannot fish for scallops. The rule for scallop fishing in the closed areas will apply to any area that is open to scallop fishing and the general scallop fishing regulations will apply to all remaining open areas.

Rationale: Although the Scallop PDT identified some biological benefits for the buffer zone around Closed Area II, it thought that an external buffer zone around Nantucket Lightship Area and Closed Area I would be too costly. Law Enforcement reported that the buffer zone amounted to an additional line to enforce and saw little benefit of the barrier to prevent unauthorized transfers at sea. They also saw little benefit of a very narrow internal no-fish area to separate scallop vessels that had no trip limit from ones that did because they were fishing in a closed area.

Instead, the proposed action would increase the VMS polling frequency to boost the ability to enforce the possession limit. The more frequent polling would increase the likelihood of catching an unauthorized VMS-enabled vessel in the closed area and catch an authorized vessel that temporarily exited the closed area to transfer scallops.

<sup>&</sup>lt;sup>8</sup> A three trip allocation for vessels fishing in Closed Area II is expected to catch 83 percent of the TAC if only the vessels that fished there in 1999 fished their allocation. The Council assumed that all eligible vessels would fish in the Nantucket Lightship Area and Closed Area I, because there is no a priori knowledge of how many vessels are likely to fish in these newly re-opened areas.

### 5.1.3 Total Allowable Catch and Set-asides (Framework Adjustment 13)

### 5.1.3.1 Total Allowable Catch of Sea Scallops

A TAC for sea scallops was calculated as 20 percent of the estimated biomass of sea scallops in each closed area during the 2000 fishing year. Using data from the CMAST photographic survey, the two experimental fisheries in 1999, the Closed Area II fishery observations, and the 1998 research survey, the total TAC would be 2,495 mt (5.5 million lbs.), 3,175 mt (7.0 million lbs.), and 2,994 mt (6.6 million lbs.) for the Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively (Table 8).

**Rationale:** The TACs would allow landings of sea scallops that are consistent with the fishing mortality target (F = 0.20) in the overfishing definition and with the expected change in biomass in the closed areas if there were no fishing in the closed areas during the 2000 fishing year. At the TAC, the average biomass in the three closed areas is expected to increase by 7.8 percent between the end of 1999 and the end of 2000. Projections that approximate the proposed TACs are given in Section 6.2.6.1.6 and the TAC estimates are presented in Section 6.2.6.1.6 and in Table 24.

#### 5.1.3.2 Set-asides

### 5.1.3.2.1 One-percent set-aside for research

One percent of the scallop TAC for each of the groundfish closed areas would be set-aside for harvest under a special program described in Section 5.1.13. NMFS will monitor the landings from limited access scallop vessels that fish in the closed area and close the fishery when the landings exceed or are projected to exceed the overall scallop TAC, reduced by this and other set-asides. Accounting for all three set-asides, the TAC that will apply to landings from limited access scallop vessels would be 93 percent of the total (Table 8). The research set aside would total 191,000 lbs. (87 mt).

In addition to this amount, one-percent of the yellowtail flounder TAC that applies to each area would also be set aside to enable 'compensation' trips' before or after the groundfish closed areas are no longer accessible to commercial scallop fishing and to allow scallop research at any time in the closed areas that might have a high yellowtail flounder bycatch. The total yellowtail flounder TAC set-aside is 1,102 lbs. (0.5 mt) for the Nantucket Lightship Area and 15,984 lbs. (7.25 mt) for Closed Area I and Closed Area II, combined (Table 8).

**Rationale**: A set aside is necessary to fund and enable important scallop research in the closed areas. This information about the scallop resource, ways to reduce bycatch, habitat, and other information will be crucial as the Council debates area based management.

<sup>&</sup>lt;sup>9</sup> A 'compensation' trip is one in which scallops are harvested to fund scallop research.

**Table 8.** Summary of TACs and limits for scallop access in the Georges Bank closed areas during the 2000 fishing year.

		Nantucket Lightship	Closed Area I	Closed Area II	
			Area		
	Total TAC		5.5 million lbs. (2,495 mt)	7.0 million lbs. (3,175 mt)	6.6 million lbs. (2,994 mt)
	TAC for limited	l access vessels	5.12 million lbs. (2,322	6.51 million lbs. (2,953	6.47 million lbs. (2,935
			mt)	mt)	mt)
Scallops		AC for observers (one	110,000 lbs. (50 mt)	140,000 lbs. (64 mt)	132,000 lbs. (60 mt)
Scanops	percent deduction	on from the Total TAC)			
	One percent TA	C to fund scallop research	55,000 lbs. (25 mt)	70,000 lbs. (32 mt)	66,000 lbs. (30 mt)
	Five percent TA	C for general category	275,000 lbs. (125 mt)	350,000 lbs. (159 mt)	
	vessels				
Initial trip	Initial trip allocation for limited access vessels		1	2	3
Scallon no	ggoggion limit	Limited access vessels	10,000 lbs. per trip	10,000 lbs. per trip	10,000 lbs. per trip
Scallop possession limit  General category vessels		400 lbs. per trip	400 lbs. per trip	400 lbs. per trip	
Regulated	multispecies	Limited access vessels	1,000 lbs. per trip	1,000 lbs. per trip	1,000 lbs. per trip
possession	General category vessels		Zero possession	Zero possession	Zero possession
		Southern New England	109,129 lbs. (49.5 mt)		
		stock			
Yellowtail flounder TAC Cape Cod stock			1	.582 million lbs. (717.75 mt)	
Georges Bank sto		Georges Bank stock			
Set-aside for research or		1,102 lbs. (0.5 mt)		15,984 lbs. (7.25 mt)	
		compensation trips			

#### 5.1.3.2.2 One-percent set-aside and one-percent supplement for funding observers

One percent of the scallop TAC for each of the groundfish closed areas would be set-aside to pay for observers as described in Section 5.2.16. NMFS may authorize vessels that carry observers to land more than 10,000 lbs. of scallop meats (i.e. more than the scallop possession limit) with the additional revenue used to pay for the observer at a rate determined by the NMFS. NMFS will monitor the landings from limited access scallop vessels that fish in the closed area and close the fishery when the landings exceed or are projected to exceed the overall scallop TAC, reduced by this and other set-asides.

Accounting for all three set-asides, the TAC that will apply to landings from limited access scallop vessels would be 93 percent of the total (Table 8). The set aside to pay for observers would total 191,000 lbs. (87 mt). An additional 191,000 lbs. would be authorized for harvest in addition to the overall TAC to pay for observers, making the total funding equivalent to the landings of 382,000 lbs. (174 mt).

Rationale: In the Closed Area II fishery in 1999, the one-percent TAC was insufficient to account for the additional authorized landings to fund the observer program. Since there was no provision for this possibility and the fishery did not take the total TAC anyway, the additional landings exceeded the authorized amount, but did not increase scallop mortality above the targets adopted by the Council. To correct for last year's underestimate and more accurately account for the actual cost of the observer program, the Council increased the TAC for the observer program to two percent, taking one percent as a set-aside from the overall TAC. Since the closed area access program is constrained by the TACs for yellowtail flounder, it is unlikely that the scallop TAC will be taken for the three areas combined. This alternative is not therefore expected to cause the fishery to exceed the scallop mortality targets.

### 5.1.3.2.3 Five-percent for access by general category vessels in Nantucket Lightship Area and Closed Area I

Five percent of the total scallop TAC for Nantucket Lightship Area and Closed Area I will be set-aside to account for landings by vessels with general category scallop permits. When the landings from these vessels exceeds or are projected to exceed the general category TAC, NMFS will discontinue access to one or both of the closed areas by general category vessels and notify general category vessels that are authorized to fish for scallops that they may no longer fish in the closed areas.

The TACs for general category vessels that fish in Nantucket Lightship Area and Closed Area I will be 275,000 lbs. (125 mt) and 350,000 lbs. (159 mt), respectively. Accounting for all three set-asides, the TAC that will apply to landings from limited access scallop vessels would be 93 percent of the total (Table 8). General category vessels may not possess more than 400 pounds of scallops on any trip.

**Rationale**: Although a 400 pound scallop possession limit will apply to general category vessels fishing in the closed areas, there will be no limit on the number of participants (i.e. any vessel may have a general category permit) or on the number of trips that a vessel may take into the closed areas. The Council does not expect many general category vessels to participate, however, because they must use dredges, rather than the more prevalent trawls, and because the cost of fishing will be relatively high. Historically, the landings by general category scallop vessels have rarely exceeded five percent of the total landings from all areas (NEFMC 1999b). With this TAC set-aside, 1,562 general category trips are possible in the two areas together.

### 5.1.4 Total Allowable Catch for yellowtail flounder (Framework Adjustment 34)

The TAC for Georges Bank yellowtail flounder catches (i.e. landings and dead discards) from scallop vessels fishing in Closed Area I and Closed Area II is 725 mt, corresponding to 15 percent of the target groundfish TAC for Georges Bank yellowtail flounder plus 3.3 percent of the 1998 landings for the Cape Cod yellowtail flounder stock. The TAC for Southern New England yellowtail flounder catches (i.e. landings and dead discards) from scallop vessels fishing in the Nantucket Lightship Area is 50 mt, or about 15 percent of the target groundfish TAC for the Southern New England yellowtail flounder stock<sup>10</sup>.

The closed area access program includes a one-percent set-aside for the yellowtail flounder TAC as well as the scallop TAC to allow research (Section 5.1.13.4). The yellowtail flounder TAC for the closed area access program is 49.5 mt for the Nantucket Lightship Area and 717.75 mt for Closed Area I and Closed Area II, combined (Table 8). The remaining 0.5 and 7.25 mt will be set aside to enable scallop research in the closed areas in the event that they close due to high yellowtail flounder bycatch before the research is conducted.

If at any time, information or data indicate that the total yellowtail flounder bycatch will exceed or is projected to exceed the yellowtail flounder TAC, the Regional Administrator may suspend the closed area scallop fishery by publishing a notice in the Federal Register. The potential for the closed area access scallop fishery to exceed the combined yellowtail flounder TACs should also be considered when determining whether an allocation of additional trips for Closed Area I is justified. Similarly, the yellowtail flounder bycatch in the Nantucket Lightship Area should be considered to determine whether an additional trip allocation is likely to exceed the yellowtail flounder TAC for the Southern New England stock.

**Rationale:** Georges Bank and Southern New England yellowtail flounder stocks are two of the primary, overfished stocks of groundfish governed by the Multispecies FMP. Since these are critical stocks, this measure ensures that the scallop fishery bycatch of yellowtail flounder does not jeopardize or delay the existing yellowtail flounder rebuilding program. The Council determined that the Amendment 7 targets were still operative and consistent with the Sustainable Fisheries Act and National Standard 1.

The Council adopted the 15 percent proportion for a TAC for the Closed Area II fishery and most of the yellowtail flounder in Closed Area I are assumed to be part of the Georges Bank stock. The 3.3 percent proportion is the historic proportion of landings from the Cape Cod yellowtail flounder stock between 1982 and 1993.

The yellowtail flounder bycatch is expected to be 602 to 707 mt if all active vessels fish the potential number of trips associated with the area access options. These estimates are based on the observations from the Closed Area II fishery and the experimental fisheries in Nantucket Lightship Area and in Closed Area I. Vessels in the latter experimental fishery used 8-inch mesh twine tops.

This action, on the other hand, requires that dredges have twine tops with 10-inch, rather than 8-inch, mesh. Industry has also advised that it will be possible to significantly reduce their finfish bycatch through operational adjustments. These adjustments include fishing in areas within the groundfish closed areas where yellowtail flounder are less abundant, slowing the vessel and dredge speed while fishing, and letting the dredge set still on the bottom a few minutes before haul back. As previously anticipated for the Closed Area II access in 1999, the Council anticipates that a significant portion of the scallop TAC can be

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<sup>&</sup>lt;sup>10</sup> Fifteen percent of the Southern New England yellowtail flounder TAC is 37 mt, which was rounded to 50 mt by Council vote.

harvested before the fishery catches this much yellowtail flounder provided that the necessary adjustments are made by industry.

### 5.1.5 Triggered Area Closure (Frameworks 13 and 34)

If at any time, information or data indicate that the total groundfish bycatch or the total scallop catch will exceed the TACs, the Regional Administrator may suspend the re-opening of the closed areas to scallop vessels by publication of a Federal Register notice.

**Rationale**: Although Georges Bank yellowtail flounder has been in a rebuilding program since Amendment 7 in 1995, Amendment 13 could allow additional yellowtail flounder catch in a 10-year rebuilding program, consistent with the control rule and the Sustainable Fisheries Act. On the other hand, Georges Bank yellowtail flounder is in the sixth year of a rebuilding program and remains a few years away from achieving  $B_{MSY}$  with status quo fishing mortality.

Significant changes in fishing strategies are expected to occur when scallop vessels fish in the closed areas to maximize their catch per day-at-sea. Although data is still being collected and has not yet been analyzed, a preliminary analysis (Appendix II) indicates that scallop fishermen were effective in keeping yellowtail flounder bycatch during the Closed Area II fishery below expected levels.

These changing strategies could increase the scallop catch and groundfish bycatch well above anticipated levels. If this occurs, the additional catches could increase fishing mortality above the fishing mortality thresholds ( $F_{max}$  for sea scallops,  $F_{0.1}$  for yellowtail flounder) and potentially jeopardize the rebuilding programs set by Amendments 7 for the Multispecies and Scallop FMPs. To prevent this potential outcome, the Regional Administrator would be authorized to discontinue the closed area scallop fishery.

### 5.1.6 Effort limits (Framework 13)

### 5.1.6.1 Trip allocations

Each limited access scallop vessel will be authorized to fish for one trip in the Nantucket Lightship Area, two trips in Closed Area I, and three trips in Closed Area II (Table 4). Since part-time vessels will have a maximum allocation of 58 days-at-sea in the 2000 fishing year 11, part-time vessels can take a maximum of five closed area trips in any combination up to one in the Nantucket Lightship Area, two in Closed Area I, and three in Closed Area II. A part-time vessel would be eligible for additional allocations (see below) if it had not used up its annual day-at-sea allocation by fishing in other areas. If for example, the Regional Administrator allocates an additional trip in Closed Area I, a part-time vessel could therefore take three trips in Closed Area I and two trips in Closed Area II, rather than the reverse. An occasional scallop vessel will have a maximum allocation of 19 days in the 2000 fishing year 12 and is therefore eligible to take a trip in any one closed area, regardless of additional allocations through a possible in-season adjustment via the provision described below.

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<sup>&</sup>lt;sup>11</sup> A part-time scallop vessel will have a 48 day-at-sea allocation in the 2000 fishing year plus up to 10 unused days-at-sea carried forward from the 1999 fishing year.

<sup>&</sup>lt;sup>12</sup> An occasional scallop vessel will have a 10 day-at-sea allocation in the 2000 fishing year plus up to nine unused days-at-sea carried forward from the 1999 fishing year (it must have used at least one day-at-sea to be eligible to carry forward unused days).

For the Nantucket Lightship Area and Closed Area I (but not for Closed Area II), the Regional Administrator may make an in-season re-allocation of closed area trips at any time, assuming that each trip catches the scallop possession limit. Unlike the Closed Area II fishery in 1999, limited access vessels would not be required to fish in each or any area to be eligible for additional trips if the Regional Administrator makes an in-season adjustment. If additional trips are authorized, the Regional Administrator may also extend the season for the Nantucket Lightship Area and Closed Area I to include January 1 to January 31, 2001.

**Rationale**: The analysis (Section 6.2.6.1.7) indicates that limited access scallop vessels may be allocated up to 1 trip in the Nantucket Lightship Area, 2 trips in Closed Area I, and 3 trips in Closed Area II, with a 10,000 pound scallop possession limit, without exceeding the scallop TAC. The actual scallop catch will depend on how frequently each eligible vessel chooses to fish in the closed areas, allowing for later allocations of additional trips through one or more in-season adjustments.

For Closed Area II, the Scallop PDT assumed that the same number of limited access vessels would fish in 2000 as fished in 1999. If the participation by scallop vessels increases in Closed Area II, because of the additional access in 2000 or for other reasons, the catches could increase so the Closed Area II access program would close from landing the scallop TAC.

Under these assumptions, the three trip allocation is expected to allow the scallop vessels to harvest 83 percent of the scallop TAC for Closed Area II. An additional trip would exceed the scallop TAC. It is therefore unlikely that additional trips will be needed to harvest the scallop TAC (provided the yellowtail flounder bycatch does not exceed its TAC), unless participation by scallop vessels falls below the observed participation in the 1999 fishery.

On the other hand, the analysis estimates that the initial trip allocation will result in the harvest of 61 percent of the scallop TAC in the Nantucket Lightship Area and 89 percent of the scallop TAC in Closed Area I. An additional trip in either area would exceed the scallop TACs, unless fewer vessels actually fished than the analysis assumes. Since the analysis assumes that all eligible limited access scallop vessels will fish their maximum allocation of trips, like the 1999 Closed Area II access program, it is very likely that fewer vessel will actually fish in the two closed areas, increasing the possibility that an additional trip could be allocated without exceeding the scallop TAC. Whether an in-season adjustment is possible will depend mainly on the actual bycatch of yellowtail flounder.

### 5.1.6.2 Day-at-sea restrictions and tradeoffs

Vessels that report VMS positions within a groundfish closed area while on a scallop day-at-sea will automatically accumulate a 10 days-at-sea or the actual time at sea, whichever is more.

**Rationale**: An accumulation of days-at-sea for trips in the closed areas must be greater than the actual trip length to compensate for the increased scallop mortality caused by fishing in the closed areas. For vessels that use most or all of their day-at-sea allocations outside of the groundfish closed areas, the effect of the added tradeoff is to reduce the available fishing time elsewhere. This in turn reduces fishing mortality in those areas to compensate for the added mortality in the groundfish closed areas. For the stock as a whole, the intent is to prevent mortality from increasing from the closed area access program, i.e. the program is conservation neutral relative to the goals of the FMP.

Accounting for the differences in scallop yield inside and outside of the groundfish closed areas, a 10 day-at-sea accumulation would decrease mortality (i.e. the number of scallops removed from the stock) by about one percent. Higher day-at-sea accumulation amounts for each closed area trip would

decrease mortality and vice versa. If additional trips are authorized, fishing mortality would decline relative to the analysis from the added day-at-sea tradeoffs. This occurs because at that point, there would be fewer unused days for vessels to use in the closed areas and the added trips would be catching larger scallops in the closed areas than would an equivalent trip in the open areas.

### 5.1.6.3 Maximum trip length

There is no maximum trip length for vessels that fish in the groundfish closed areas. Vessels on trips in the groundfish closed areas would accrue 10 days-at-sea or the actual time at sea, whichever is greater.

**Rationale**: A maximum trip length would prevent vessels from fishing longer than 10 days if catch rates substantially decline. A limit on the trip length appears unnecessary, however because either the catch would have to exceed the TAC for this to occur or the catch rates would probably be below the point where it is more favorable to fish in the open areas rather than in the groundfish closed areas.

### 5.1.7 Eligibility and exemptions (Framework Adjustments 13 and 34)

### 5.1.7.1 Limited access scallop vessels

All vessels with scallop limited access permit and days-at-sea allocations will be eligible to fish under the program to access the closed areas. This would include vessels that did not fish during 1998 or 1999 and vessels re-activating history permits. Inactive vessels or history permits are eligible to fish in the re-opened areas to ensure equitable access for all legal scallop vessels.

Permit-holders with "Confirmation of Permit Histories" (CPH) may not fish with two permits on one vessel in any given year. In other words, if a person owns Vessel A and also possesses a CPH for Vessel B (a vessel no longer owned), the owner of Vessel A may not fish both Vessel A's scallop days-atsea and Vessel B's scallop day-at-sea history on Vessel A during the same year. This policy is consistent with the rules that prevent owners of multiple vessels from stacking permits onto one vessel and preventing the use of more than one vessel's days-at-sea on a single vessel.

Inactive vessels with limited access scallop permits could be fishing for other species in New England or other regions and would not therefore be using scallop days. History permits, on the other hand, could be transferred to a replacement vessel to fish for scallops.

There are 328 vessels that have limited access scallop permits and these vessels will be allocated 31,267 days-at-sea for the 2000 fishing year beginning March 1 (NEFMC 1999c). In addition, there are 37 confirmation of permit histories that could be reactivated during the year by applying for a replacement vessel permit. Depending on the option chosen, there could be 367 to 685 potential trips to the three areas combined. Assuming a 10-day trip, the total number of potential trips by the fleet is 3,420.

Table 9. Number of eligible vessels with full-time, part-time, and occasional scallop limited access permits as of February 11, 1999.

		Confirmation of	Total Eligible	1999 Day-at-sea	Maximum 10-day
Category	Vessel Permits	Permit Histories	Vessels	allocation	trips
Full time	236	21	257	120	12
Part time	43	14	57	48	5
Occasional	49	2	51	10	1

		Confirmation of	Total Eligible	1999 Day-at-sea	Maximum 10-day
Category	Vessel Permits	Permit Histories	Vessels	allocation	trips
Total	328	37	365	29,472	3,420

**Rationale**: Limited access scallop vessels have permits to target scallops and use days-at-sea. There is no justification or objective that would exclude any class of limited access permit from fishing in the closed areas. Exclusion of a class of limited access scallop vessels would not be fair and equitable.

# 5.1.7.2 Net boats may fish in the groundfish closed areas with dredges and continue using trawls in all other areas open to scallop fishing – status quo

The status quo would allow scallop trawl vessels to use dredges within the re-opened closed areas (Section 5.2.11) without jeopardizing their authority to use trawls to fish for scallops in other areas. Vessels that are currently authorized to use trawls to fish for scallops have a permit to use trawls, based on its past fishing history. Section 648.51(f) prohibits the use of trawl nets to fish for scallops, unless a vessel has a letter of authorization. A vessel is eligible for a letter of authorization if:

- it had already been issued a letter of authorization,
- it had not fished with a dredge more than 10 trips between January 1, 1988 and December 31, 1994, inclusive, or
- it replaces a vessel that had a letter of authorization

Although these vessels may not be capable of fishing for scallops with standard dredges, there is no requirement to use only two 15-foot dredges within the closed area, a common practice for scallop dredge vessels. The regulations only limit the combined width of dredges. To fish for scallops in the closed area, net vessel fishermen may decide to fish with a single dredge or with smaller dredges.

**Rationale:** This provision clarifies the intent of the Council to allow participation by the scallop trawl vessels in the closed area, but only when these vessels use a scallop dredge. Using scallop trawls in the re-opened areas could increase groundfish bycatch concerns (due to larger swept area), since scallop trawl vessels could, according to the Sea Scallop FMP, legally use less than the 6-inch mesh required by the Multispecies FMP.

This option most clearly avoids any objections that might arise out of National Standard 4 concerns. Consistent with the above section, scallop vessels that use trawls to fish for scallops will be eligible to fish in the re-opened areas, but they could only use a scallop dredge in the re-opened area. If using trawls to fish for scallops in any way jeopardized the vessel's letter of authorization, the vessel might not be able to revert to using trawls once they began using dredges.

# 5.1.7.3 Access by vessels with General Category permits to fish for scallops in the groundfish closed areas with a separate scallop TAC – Alternative 3 (Framework Adjustments 13 and 34)

General category vessels will be able to fish for scallops in the Nantucket Lightship Area and in Closed Area I when they are open for scallop fishing by limited access scallop vessels and land up to five percent of the total scallop TAC, or 125 and 159 mt, respectively (Table 4). Vessels with a general category scallop permit must contact the Northeast Regional Office to obtain authorization to fish in the closed areas. This authorization will be issued to a vessel that has a general category scallop permit, but does not have a limited access scallop permit, for a 30-day or more period (at the applicant's discretion),

during which the vessel may only fish in Nantucket Lightship Area and Closed Area I. Authorized general category vessels may retain no more than 400 lbs. of scallop meats, consistent with the Sea Scallop FMP, and may retain no regulated multispecies.

#### **Exempted fishery**

The proposed action will also create an exemption from the Multispecies FMP small mesh regulations to allow vessel with general category permits to fish for scallops with a dredge, when the groundfish closed areas are open for scallop fishing by limited access vessels. This exemption will require vessels with general category scallop permits to comply with the following provisions.

Vessels with general category scallop permits would be required to report landings and submit vessel trip reports, would be required to carry observers when requested, and operate a VMS of a type that is approved for use by limited access scallop vessels. General category vessels that fish in the closed areas would be required to use one legal scallop dredge, not greater than 10'6" in width, with the same twine top requirements that apply to limited access vessels fishing in the groundfish closed areas (Section 5.1.8.2). No other gear may be onboard the vessel while fishing with the closed areas or while fishing on a trip that had fished within the closed areas. Vessels with general category permits that fish in this exempted fishery will have a zero possession limit for regulated multispecies (Section 5.1.9.3), but the yellowtail flounder bycatch will be monitored and counted against the yellowtail flounder TAC for the applicable groundfish closed area.

Vessels with limited access scallop permits<sup>13</sup> may not fish in the closed areas under this exempted fishery.

**Rationale:** This alternative would allow access to vessel with general category scallop permits, consistent with the history of some vessels that target scallops during favorable seasons and conditions. Many vessels with general category permits are already required to report all landings and submit vessel trip reports under other FMPs<sup>14</sup>. Like Alternative 2, the proposed action would require the creation of a new exempted fishery to allow these vessels to fish in the closed areas while not complying with the groundfish day-at-sea restrictions and small mesh requirements, however.

Although these vessels would be prohibited from possessing regulated multispecies, their bycatch would be counted against the TAC, increasing regulatory discards, and requiring adequate observer sampling on these vessels to accurately determine the yellowtail flounder bycatch.

#### 5.1.8 Gear restrictions

### 5.1.8.1 Dredges (Framework Adjustment 13)

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

<sup>&</sup>lt;sup>13</sup> Many limited access scallop vessels also possess a General Category scallop permit to accommodate scallop bycatch while they are fishing for other species. Some vessels also target scallops while not under a day-at-sea under this permit.

<sup>&</sup>lt;sup>14</sup> Landings reports and vessel trip reports are now required by regulations implementing the Northeast Multispecies, the Monkfish, the Summer Flounder, and other FMPs that govern fisheries in the northeast region. See the SAFE report (NEFMC 1999) for a cross reference of vessels with general category scallop and other permits.

(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 5.1.7.3 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**: 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 pounds per day or trip (whichever is greater), current regulations allow the use of dredges with a total width of 31 feet.

### 5.1.8.2 Twine tops (Framework Adjustment 34)

Any vessel with a general category or limited access scallop permit that fishes in Nantucket Lightship Area, Closed Area I, or Closed Area II must use a scallop dredge with a twine top having diamond mesh no smaller than 10-inches (25.40 cm). This mesh may be hung on the square or the diamond within the area of the dredge occupied by the twine top. The mesh will be measured using the same methods for the current 8-inch twine top, as described in §648.51(a)(2)(iii).

**Rationale:** The purpose of this measure is to reduce groundfish and other finfish bycatch and take advantage of recent research that shows a significant reduction of bycatch, especially for flatfish, with insignificant reductions of scallop catch when scallops are large. Framework Adjustment 11 also included a measure to increase the twine top mesh to 8-inches diamond in all other areas, to mitigate the groundfish bycatch while fishing in the closed areas. This permanent increase to an 8-inch twine top became effective on December 9, 1999, six months after the implementation of the Framework Adjustment 11 measures. The larger twine top inside and outside of the groundfish closed areas will ensure that the access program will be conservation-neutral for many species.

The larger twine top mesh is expected to produce significant reductions for many species, especially flatfish like yellowtail flounder, winter flounder, and windowpane flounder. On the other hand, a larger twine top is not expected to significantly reduce monkfish and adult roundfish catches. Catches of summer flounder and possibly skates could be reduced as well, benefiting those species and reducing the opportunity of plugging the dredge bag. Dredge bags that are clean and not plugged with fish have been reported to release more small scallops through and between the rings, improving size selection of the dredge.

Although the standard is now 8-inch mesh twine tops, the Closed Area II scallop fishery access program (NEFMC 1999a) required scallop vessels to use 10-inch mesh twine tops. About 180 vessels participated in the fishery and now have these twine tops on hand. Interest in Framework Adjustment 13 has been high and many fishermen and suppliers are aware of this pending requirement, allowing them time to order new stock before the closed area access begins.

#### 5.1.9 Possession limits

# 5.1.9.1 Scallop possession limit for limited access vessels (Framework Adjustment 13)

Vessels on a scallop day-at-sea may possess no more than 10,000 pounds of scallop meats on trips that had fished in the Nantucket Lightship Area, in Closed Area I, or in Closed Area II. The Regional Administrator may make one or more in-season adjustments to the scallop possession limit, assuming that each future trip will catch the scallop possession limit.

**Rationale:** The scallop possession limit will ensure that the scallop fishery does not exceed the scallop TAC for each of the groundfish closed areas. According to the analysis (Section 6.2.6.1.10), the scallop possession limit, coupled with the trip allocation for each area, is expected to allow the fleet to harvest 61, 89, and 83 percent of the TAC in the Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively. A non-uniform scallop possession limit would allow Framework 13 to define a program that would more closely achieve the TACs, but a different possession limit for each area would be much more complicated and difficult to enforce. In place of such a complicated system, the Council and the Enforcement Committee preferred a uniform scallop possession limit for all three areas, with an in-season adjustment procedure for trip allocations and/or the scallop possession limit to enable the fishery to catch the TACs.

The analysis assumes that all eligible vessels will take one trip in the Nantucket Lightship Area and two trips in Closed Area I. Since the 1999 fishery in Closed Area II provides information about the potential participation in 2000, the analysis assumed that the same vessels that fished in Closed Area II during 1999 would fish during 2000. The Council does not expect all eligible vessels to fish and the actual catch by participating vessels will be considerably lower than the TAC. The estimated total fishing effort, scallop catch, and bycatch are reported in Table 31.

A wide range of trip allocations (zero to four trips) and trip limits (8,000 to 18,000 pounds) were analyzed and evaluated. The choices are shown in Table 15 and the estimated impacts are given in Sections 6.2.6.1.10 and 0.

Estimated net benefits are \$33.4 million higher than the status quo for the proposed action, \$14.4 from consumer surplus and \$19.0 million from producer surplus. Total estimated net benefits for the proposed action are \$185 million (Table 32). This is better than most of the rejected alternatives with scallop possession limits ranging from 8,000 to 18,000 pounds (Table 40). Only the 15,000 pound scallop possession limit alternative has a slightly higher net benefit estimate, \$186 million.

Although lower trip limits (with more allocated trips) were estimated to be more profitable than fishing in the existing open areas, the Council opted for the highest scallop trip limit that would be conservation neutral. This approach gave the greatest assurance that eligible vessels would fish in Closed Area II and reduce their fishing effort in the open areas, where smaller scallops predominate.

There are significant impediments for Confirmation of Permit Histories (CPH) to be reactivated. The profits from six closed area trips (roughly \$82 thousand) may not be enough to justify the cost of reactivating the permit on a new or replacement vessel. Other factors, including the expected increase in open area catches during the 2000 fishing year are more likely to induce owners to reactivate vessels with Confirmation of Permit Histories. Excluding CPHs, the vessels with permits assigned to a vessel could only land 4,000 mt, seven percent less than the scallop TAC. It is also very unlikely that inactive vessels from the Mid-Atlantic will fish in the closed area. Any reactivation of a CPH is likely to be more than offset by non-participation of the 48 vessels that did not fish for scallops during the 1998 fishing year.

Since the price differential is small between large and small scallops and discard mortality is generally low, highgrading (i.e. discarding less valuable scallops) is not likely to occur or be a significant problem.

#### 5.1.9.2 Shellstock - 50 US Bushels

Any vessel with a limited access or general category scallop permit in a groundfish closed area will be prohibited from possessing more than 50 US bushels of shell stock when it is no longer in the closed area (Section 5.1.1). For purposes of enforcing the scallop trip limit, 50 US bushels of shell stock shall be counted as 400 pounds of scallop meat.

**Rationale:** The purpose of this measure is to prevent vessels from catching more than the scallop trip limit allows and discarding the excess scallops in port. It will also ease the enforcement burden caused by the potential for partial offloadings as scallops are shucked in port. On the other hand, it is necessary to allow some landings of shell stock to satisfy a market for large, live scallops.

# 5.1.9.3 Scallop possession limit for general category scallop vessels (Framework Adjustment 13)

The scallop possession limit in the groundfish closed areas for vessels with a general category scallop permit will be 400 pounds per trip or per 24-hour period, whichever is more. This possession limit is the same as the one applying to all vessels with a general category scallop permit or vessels with a limited access scallop permit while called out of the day-at-sea program [§648.52(a)]. Limited access vessels will be prohibited (see Section 5.1.7.1) from fishing in the groundfish closed areas, however, while not on an allocated closed area trip.

**Rationale**: The intent for closed area access by vessels with general category scallop permits is no different from the original intent of the permit, for vessels that target scallops. During the development of Amendment 4, the general category scallop permit was retained as an open access category for vessels that typically landed higher amounts of scallops as bycatch. At the same time, Amendment 4 also retained the general category permit to accommodate vessels that occasionally targeted small amounts of scallops, but did not qualify for limited access.

In the Amendment 4 analysis, it was evident that some vessels that did not qualify for an occasional limited access permit had targeted sea scallops, before the 1988-1990 qualification period. At that time, the few vessels in this situation did not significantly contribute to fishing mortality and there was no reason to believe that fishing effort in this category would increase. According to the 1999 SAFE report (NEFMC1999b), the 400-pound scallop possession limit is still satisfactory for this purpose and at this time is not expected to significantly increase scallop fishing mortality.

Access to the closed areas could cause the landing by general category vessels to increase, but this is limited to five-percent of the TAC in the Nantucket Lightship Area and Closed Area I. With a 400-pound possession limit, the possession limit would allow for 1,562 potential trips. If just 20 vessels declare into the program, vessels would be able to take 78 trips on average during the closed area scallop fishery. A higher scallop possession limit would allow for fewer trips, but each vessel could land more scallops on a trip.

Since the pool of vessels that might participate is so large and these vessels also have a variety of other permits, the economics that would determine participation are very complex. There were trips in 1999 however that targeted scallops by vessels with general category permits. Given this fact, the

Council believes that the scallop possession limit for general category vessels is sufficient for vessels that had infrequently targeted sea scallops, but not too high to attract new fishing effort by vessels with general category scallop permits that never targeted scallops.

### 5.1.9.4 Regulated Multispecies - Limited access scallop vessels

While portions of the groundfish closed areas are open to scallop fishing, scallop vessels on a closed area trip (i.e. vessels with a VMS position report within the groundfish closed areas) may retain and land up to 1,000 pounds of regulated species. The Regional Administrator is authorized and requested to make a mid-season adjustment to this possession limit and reduce regulatory discards to the maximum extent possible.

**Rationale:** This measure would increase the groundfish trip limit to accommodate the expected bycatch of large mesh regulated species. Raising the trip limit would avoid economic waste and partially address National Standard 9 concerns. Since some discarded fish survive, unreasonable increases in the trip limit could however increase mortality on overfished groundfish stocks and promote continued fishing when the scallop catch rates decline.

The expected bycatch of regulated species far exceeds the existing 300 pound possession limit. On the other hand, the Council wants to avoid creating an incentive for scallop vessels to fish in areas where the groundfish bycatch is high or to continue fishing for groundfish when the vessel reached its scallop possession limit. Increasing the regulated species possession limit from 300 to 500 pounds will decrease regulatory discards, but will not encourage fishing for groundfish or discourage efforts to avoid bycatch. If all 265 active vessels fish for scallops on their three allocated closed area trips, this adjustment would reduce regulatory discarding by 159,000 pounds.

It is also unlikely that scallop vessels will continue to fish after catching the scallop possession limit. Other than monkfish, no other species are caught by scallop dredges and are valuable enough to land. Flatfish (e.g. yellowtail, winter, and windowpane flounders) are regulated by the Multispecies FMP and landings will be limited to no more than 1,000 pounds. The expected catches of these species are greater than this low possession limit. The expected catch of monkfish (the other valuable species that are caught by scallop dredges) while fishing for scallops in the closed area is expected to approximate the monkfish possession limit, 300 pounds tail-weight per day-at-sea.

### 5.1.9.5 Regulated Multispecies – Vessels with general category scallop permits

Vessels with general category scallop permits will be prohibited from retaining regulated multispecies.

**Rationale**: This prohibition is consistent with other small mesh exemption programs. Under these exemptions, vessels are only allowed to fish where and when the gear has a regulated multispecies bycatch that is less than five-percent of the total weight of fish onboard. They are not allowed to retain regulated multispecies to prevent the exemptions from promoting fishing on regulated multispecies.

Allowing retention of 300 to 1,000 pounds of regulated multispecies would enable a vessel with a general category permit to keep as much or more regulated multispecies as scallops. This would be equivalent to a targeted multispecies fishery outside the day-at-sea program with small mesh gear.

#### 5.1.9.6 Monkfish

The possession limit for monkfish will be the amount specified in the Monkfish FMP. For limited access scallop vessels on a day-at-sea, this will be 300 pounds tail-weight per day-at-sea (996 pounds whole-weight). According to the Monkfish FMP [§648.94(c)(4)], general category vessels that fish in the groundfish closed areas while they are open for scallop fishing would be considered as a small-mesh vessel and could retain only 50 pounds of monkfish tails (166 pounds whole-weight). Some of the general category vessels may also have qualified for monkfish limited access, but they could not fish for scallops in the groundfish closed areas on a monkfish day-at-sea, because the former requires that vessels use a dredge while the latter prohibits it.

Rationale: The expected bycatch of monkfish is expected to be less than the allowance (300 pounds tail-weight per day-at-sea) for scallop dredges, therefore adjustment is unnecessary. The monkfish trip limit for general category scallop vessels is appropriate, since the purpose of the access program is to allow some small vessels to target scallops, like they had done infrequently in past years. No specific data exists, but the small dredge used by general category vessels is less likely to retain monkfish. Similar to other species, monkfish would be more able to avoid a small dredge than a large one, like the dredge used by limited access scallop vessels. Targeting monkfish by vessels with general category permits in the closed areas would be inconsistent with this intent and could increase fishing mortality for monkfish, contrary to objective of the Monkfish FMP.

### 5.1.10 Enforcement Provisions (Framework Adjustment 13)

### 5.1.10.1 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 5.2.9.1). 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 and one that had not and is therefore authorized to fish in a groundfish closed area.

### 5.1.10.2 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.

### 5.1.10.3 Penalties for Closed Area Fishery Violations

Since many of the measures in the proposed action ensure that the FMPs meet their conservation goals for scallops, yellowtail flounder, and other groundfish, the Council considers violations of the closed area fishery management measures to be a very serious offense, particularly for intentional and willful violations. These type of violations include significant overages of the possession limits, transfers at sea, exceeding the crew limits, fishing with non-conforming gear, and fishing on more than the number of authorized trips. Penalties should therefore be commensurate with the seriousness of the violation, possibly including barring future access to areas that had been closed to rebuild scallops or other species

**Rationale:** There will be great economic incentives to break the rules for fishing in the groundfish closed areas, largely due to the differences in the resource condition in the closed area compared to the existing open areas. This provision establishes the Council's intent about intentional and willful violations of the proposed action. NMFS should take this intent into account when determining appropriate penalties for serious violations.

### 5.1.10.4 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 5.1.7.3). 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 10,000 pounds of scallops without a dredge onboard.

### 5.1.11 Reporting requirements (Framework Adjustment 13)

The reporting requirements would extend and expand to other groundfish closed areas the existing requirements for vessels fishing for scallops in Closed Area II during 1999.

### 5.1.11.1 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 hail 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. It is anticipated that very few occasional and general category vessels will want to fish in the re-opened closed areas due to the day-at-sea cost and due to the smaller size of most vessels with occasional limited access scallop permits. During 2000, occasional scallop vessel will receive 4 to 22 days-at-sea for the year. One trip to the re-opened closed areas would therefore cost them their entire annual allocation of days-at-sea.

### 5.1.11.2 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. Since conditions in the groundfish closed areas are more in line with a rebuilt resource, this information is crucial for developing a rotational area management strategy, contemplated for Amendment 10. The model developed for this framework adjustment makes some very basic assumptions about fishing operations and the distribution of fishing effort relative to the resource (Section

8.1.4.1 in Framework Adjustment 11; NEFMC 1999a). On average, the model assumptions are acceptable for estimating overall impacts, but changes in fishing strategies and non-uniform fishing effort could cause different results. The above list of variables, collected for each closed area trip, would allow the Council to refine and modify this model to improve its predictive capabilities.

### 5.1.12 Observer requirements (Framework Adjustment 13)

# 5.1.12.1 Alternative 1 – Mandatory observers on 25 percent of closed area trips

Two-percent of the scallop TAC will be allocated (Section 5.1.3.2.2) to authorize additional landings on trips carrying a NMFS-approved observer. This TAC set aside will enable the Regional Administrator to authorize additional landings on observed trips to defray the observer costs. Any scallop landings on observed trips that exceeds the scallop possession limit will be counted against the TAC set aside for observers, rather than the scallop TAC (Section 5.1.3).

At a goal, the minimum observer coverage should be 25 percent of the scallop trips in each groundfish closed area. The Regional Administrator should take whatever steps are necessary to achieve the 25 percent observer coverage goal, including training of new observers, contracting with third parties, seeking other funding sources, authorizing fewer closed area trips, or even delaying the closed area scallop fishery.

NMFS may require any vessel fishing on a scallop day-at-sea within a groundfish closed area to carry a NMFS-approved observer. The cost of carrying the observer will be borne by the vessel, unless otherwise authorized by the Regional Administrator. The Regional Administrator shall authorize such vessel, carrying an observer, to land an amount of scallops above the scallop possession limit to help defray the cost of carrying an observer. The observer will be paid through and by a means established by the Regional Administrator for paying observers for the closed area scallop fishery. The vessel is obligated to pay the observer costs regardless of whether the vessel lands or sells any scallops on the observed trip.

In addition to the customary data that sea samplers collect, NMFS should also take steps to also collect the following information:

- detailed written and photographic records of all bycatch associated with scallop fishing in the closed areas
- the characterization of bycatch should include a classification of sediment information and associated macroinvertebrates
- finfish discard mortality data.

**Rationale:** A high level of observer coverage is needed because of the concerns over important impacts from scallop fishing in the groundfish closed areas and the uncertainty about how a full-scale commercial fishery will operate under conditions characteristic of a rebuilt resource. These concerns include bycatch and bycatch avoidance, discarding, damage and recovery of habitat, and detailed scallop fishery data collection.

More specifically, standard data reporting alone will be insufficient to monitor the fishery and enable in-season adjustments or a suspension of the fishery. A large portion of the yellowtail flounder bycatch could be discarded, depending on the actual catches in the re-opened closed areas, and the only reporting mechanism besides sea sampling observations would be the Vessel Trip Reports (VTR),

submitted by the vessel operator. Since the Regional Administrator could suspend the fishery when the yellowtail flounder catch exceeds the TAC (725 mt for Closed Area I and Closed Area II; 50 mt for Nantucket Lightship Area), the VTRs (a self-reporting system) could be highly suspect without a second method of augmentation or verification of the VTR data. The TAC for yellowtail flounder is estimated in terms of stock removals, i.e. landings and dead discards. To the extent that surviving fish can be identified, live discards should not be counted against the yellowtail flounder TACs, if the Regional Administrator can determine, based on scientific studies, the survival rates of yellowtail flounder discards.

A second compelling reason to closely monitor the closed area scallop fishery with a high level of observer coverage is to quantify how a full-scale commercial fishery would operate under conditions that are characteristic of a rebuilt resource. Observers collect more detailed information, often on a tow-by-tow basis, than is possible via VTRs. This detailed information is crucial for identifying where and how the fishery operates within the re-opened closed area, so that the information can be applied to future openings of closed areas as part of a rotational area management strategy, contemplated by Amendment 10. Unlike the model used to estimate fishing time and catch from the proposed closed area fishery, scallop fishing will not have uniform effort across the closed area since it will be affected by scallop density, bycatch, vessel crowding, and other factors. The sea sampling data, coupled with VTRs, will be used to fine tune the model developed to estimate impacts of the closed area scallop fishery.

It is necessary to fund this intense data collection activity through a TAC set aside, because no other funding is available. Most funding for observers comes from a Sea Sampling Observer Program to identify and enumerate marine mammal encounters. Since scallop dredges have few encounters with marine mammals, sea sampling scallop trips has a relatively low priority. Additional observer coverage is sometimes funded to take biological samples and record discards, but these scarce funds are used for other equally important fisheries like groundfish.

To enable some of the scallop landings to fund observers, the Regional Administrator may establish a mechanism for these proceeds to pay for observers and help defray the costs of carrying an observer. At six dollars per pound, the additional landings associated with a one-percent TAC set aside could provide nearly \$1.15 million to fund this activity. Since the Council anticipates that 367 to 685 trips could be taken by active scallop vessels, this fund could allow for up to \$8,700 (or 1,450 lbs.) per observed trip at a 25 percent sampling frequency, more than enough to provide funds for the proposed sampling intensity.

It is inadvisable for the vessel to pay the observer directly, due to a potential conflict of interest. A fund for such purpose could be established, on the other hand, into which the proceeds from additional scallop landings could be deposited to allow the agency to defray the observer costs or pay for observers through a third-party contract.

# 5.1.13 TAC set-aside and administration to fund scallop research (Framework Adjustment 13)

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### 5.2 Alternatives Considered and Rejected

The Council is proposing to change the regulations governing the Sea Scallop and Multispecies FMPs to allow restricted access for scallop fishing vessels to parts of the Nantucket Lightship Area (NLSA), Closed Area I, and Closed Area II. First established to implement seasonal closures to protect

spawning cod and haddock, these areas were closed year around to groundfish, scallop, and other **fishing** gear by Emergency Action in December 1994 to promote rapid rebuilding of depleted groundfish stocks. While the groundfish stocks are still recovering, the Council is proposing to allow limited scallop fishing in parts of these areas to take advantage of the high scallop biomass.

The following sub-sections outline the options to continue and expand the successful management strategies for Closed Area II (NEFMC 1999a). The potential impacts are described, to the extent possible. The measures contained in the alternatives would apply to one or both of the proposed framework actions: Framework 13 to the Atlantic Sea Scallop FMP and Framework 34 to the Multispecies FMP. Multispecies management measures that apply to closed area access (i.e. exemptions to the closed areas, groundfish trip limits, etc.) will be included in the annual framework adjustment for the Multispecies FMP. This means that access to the groundfish closed areas cannot occur any earlier than May 1, 2000 at the beginning of the multispecies FMP fishing year. Section 6.2.6 describes the expected impacts of the alternatives based on quantitative estimates or qualitative evaluation where quantitative data are absent.

These framework adjustments will allow access to the groundfish closed area(s) during the times specified in this framework action, and will not continue beyond February 29, 2001, the end of the next fishing year. The Council's intends to develop an amendment to the Sea Scallop FMP that will include a more structured approach to rotational area management. The Council schedule calls for implementation of the amendment by the beginning of the fishing year beginning March 1, 2001. This future plan amendment will replace this proposed framework action with a management system that includes periodic access to closed areas for catching larger scallops and increasing yield. Access to the groundfish closed areas may or may not continue beyond the 2000 fishing year under a future rotational area management system.

This action is intended to provide short-term economic relief to the scallop industry as it faces low day-at-sea allocations during the Amendment 7 rebuilding schedule. At the present time, there are few large scallops in the Mid-Atlantic and in the open areas of Georges Bank. Any fishing effort in those areas will therefore concentrate on small scallops that have been recruiting to the fishery, reducing any gains that might occur if these small scallops would be allowed to grow. Access to the groundfish closed areas could reduce fishing effort in the Mid-Atlantic and other portions of Georges Bank, since it would often be less profitable than fishing in the areas with higher catches of scallops.

There is an abundant year-class of scallops, first observable in the 1998 research survey, that is expected to promote rebuilding in the open areas. These scallops are recruiting to the fishery during 1999 (catches have increased significantly during the year, to over 1,000 lbs. per day) and will be fully vulnerable to fishing in 2000. If exploitation in the open scallop areas remains high, these fast-growing, young scallops will be harvested and optimum yield will not be achieved.

Shifting some fishing effort from the open scallop areas to target large scallops in the groundfish closed areas will 1) boost yield in 2000 by about 13 to 18 percent relative to status quo and 2) promote rebuilding in open areas thereby booting yield from the resource in 2001 and subsequent years. Overall, the shift of fishing effort from fast-growing, small scallops in the open scallop areas to slower-growing, large scallops in the groundfish closed areas will enhance biomass rebuilding for the resource as a whole. Conversely if the groundfish areas remain closed, biomass in these areas will grow very little while biomass in the open scallop areas will be depleted due to high exploitation rates observed under 142 day-at-sea allocation in 1998 (NEFSC 1999) and projected under a 120 day-at-sea allocation in 1999 (NEFMC 1999b).

### 5.2.1 Area access (Frameworks 13 and 33)

Considering the potential for impacts on habitat, on species that could be to be caught as bycatch, potential for gear conflict, and the effects on scallop yield and value, the PDT identified the following recommendations for accessing closed areas. Other important considerations were maximizing flexibility for fishermen to determine where/when to fish, safety, potential impact on scallop prices, and the potential for derby fishing behavior.

### **5.2.1.1 Nantucket Lightship Area**

Although the Council considered other options for access in Nantucket Lightship Area, there was only one alternative that was fully analyzed in the draft framework documents. This was the only alternative recommended by the Scallop PDT and arose from evaluation of other options during the development of Framework Adjustment 11. The majority of scallops biomass was in the northeast portion of the Nantucket Lightship Area and samples in the 1999 experimental fishery had higher bycatch amounts of monkfish, barndoor skates, and other species.

Gear conflict considerations furthermore were evident and could be minimized by adjusting the boundaries of the access area. In Framework Adjustment 11, one alternative was a boundary that was a slightly west of the line adopted by the Council in this framework adjustment. This area is commonly used by lobster fishermen and a slight eastward adjustment of the boundary, which became the proposed action, will avoid gear conflicts.

#### 5.2.1.2 Closed Area I

5.2.1.2.1 Alternative 1 – Access to areas surveyed by the 1999 experimental fishery where scallops are most abundant and bycatch rates have been measured.

Scallop vessels that are eligible to fish in the closed area(s) would be able to fish in Closed Area I within the boundaries described in Table 10. This area is shown as the central part of Closed Area I, labeled "Scallop Access" in Figure 22. Vessels with scallop permits (Section 5.2.10) would be eligible to fish a certain number of trips (Section 5.2.6) in Closed Area I from June 1, 2000 to November 30, 2000, or whenever the catch exceeds either the scallop or yellowtail flounder TAC, whichever comes first.

Table 10. Alt	ternative 1: Pro	posed boundar	ry of the	portion of (	Closed Area	I for scallo	o fishing.

Point label <sup>15</sup>	North latitude	West longitude
SC3	41°08'	Western boundary of CA1
SC4	41°00'	Western boundary of CA1
SC5	41°00'	68°45'
SC6	41°08'	68°30'
C14	41°30'	68°30'
SC7	41°30'	68°35'
SC3	41°08'	Western boundary of CA1

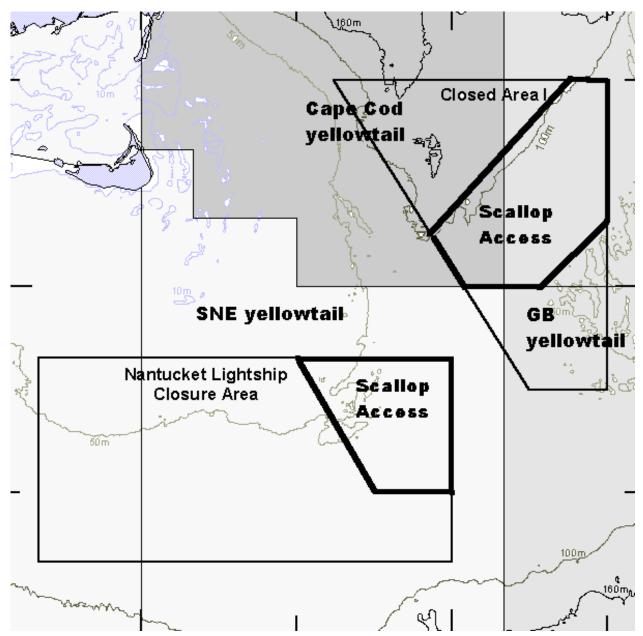
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<sup>&</sup>lt;sup>15</sup> Only points SC3 to SC7 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of Closed Area I.

**Rationale:** Considering the potential for impacts on habitat, on species that could be to be caught as bycatch, potential for gear conflict, and the effects on scallop yield and value, the PDT identified a season from June 1 to November 30 and the boundary shown in the table and figure shown below. Important considerations for the seasonal recommendation included the less critical status of Georges Bank yellowtail, the more critical status of and spawning activity by Georges Bank cod and Georges Bank haddock, and the stock boundaries of Cape Cod and Southern New England yellowtail flounder.

The proposed area overlaps the one surveyed by the CMAST photographic survey in 1999 (Figure 26) and avoids areas of winter flounder and barndoor skates (Appendix II). About 80 percent of the scallop biomass within the surveyed portions of Closed Area I during 1999 was within the proposed area (Table 21). Thus access to the proposed area is expected to produce the highest yield to the nation, while minimizing the area impacted by dredging. This area overlaps a small part of the Right Whale Critical Habitat to the north (Section 0) and a small part of important fish habitat to the south (Section 6.2.6.2).

This alternative differs from Alternative 1 in that the southern boundary of the area where scallop fishing would be allowed is moved northward to avoid an area that has been in USGS side-scan survey data as having hard bottom and complex habitat. The southern boundary, instead of going as far south as 41° N latitude, would lie along a straight east-west line along 41°07' N latitude, avoiding nearly all of the identified area.



**Figure 18.** Alternative 1: Proposed scallop access areas for Closed Area I and the Nantucket Lightship Area, showing the boundaries of the groundfish closed areas and yellowtail flounder stock boundaries (denoted by different shaded backgrounds).

5.2.1.2.2 Alternative 2 – Access to areas surveyed by the 1999 experimental fishery where scallops are most abundant and bycatch rates have been measured, avoiding areas identified as having hard bottom and complex habitat.

Scallop vessels that are eligible to fish in the closed area(s) would be able to fish in Closed Area I within the boundaries described in Table 10. This area is shown as the central part of Closed Area I, labeled "Scallop Access" in Figure 22. Vessels with scallop permits (Section 5.2.10) would be eligible to

fish a certain number of trips (Section 5.2.6) in Closed Area I from (dates to be determined) or whenever the catch exceeds either the scallop or yellowtail flounder TAC, whichever comes first.

Table 11. Alternative 2: Proposed boundary of the portion of Closed Area I for scallop fishing.

Point label <sup>16</sup>	North latitude	West longitude
SC3	41°08'	Western boundary of CA1
SC4	41°07'	Western boundary of CA1
SC5	41°07'	68°30'
Cl4	41°30'	68°30'
SC6	41°30'	68°35'
SC3	41°08'	Western boundary of CA1

**Rationale:** This alternative is similar to Alternative 1 (Figure 22), but fishing for scallops would be prohibited from an area that is identified as hard and complex bottom in recent USGS side-scan survey charts. The southern boundary falls in the middle of the 43660 loran line (Figure 23), identified by the Habitat Committee as a line separating areas of primarily smooth sand habitat from areas of hard bottom and complex habitat. An east-west line along 41°07' N latitude would avoid nearly all the areas classified as hard and complex bottom by the survey. A straight, east-west boundary along 41°07' N latitude would be easier to understand, improving compliance and easing enforcement.

The northern boundary in Alternative 1 would remain, prohibiting scallop fishing in unsurveyed areas where the scallop biomass and size is unknown and where the vulnerability of finfish bycatch has not been determined. Alternative 2 would also prevent scallop fishing along the western side of the channel, closer to Cape Cod and areas where Cape Cod yellowtail flounder are more abundant.

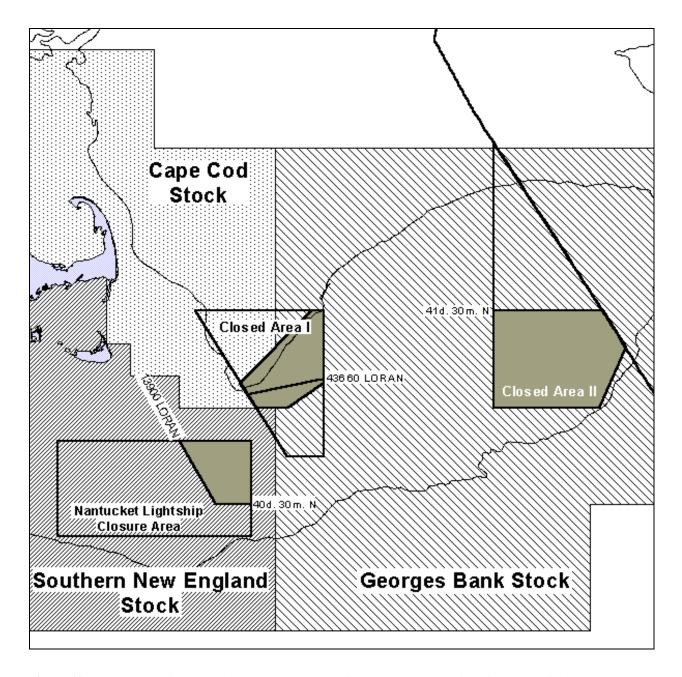
Although scallops are abundant in some places with this bottom type, the Council considers hard and complex bottom as having more value for fish habitat than adjacent sandy bottom where scallops are located. Hard and complex bottom is vulnerable to damage by heavy scallop dredges and other towed fishing gear. It is therefore attractive to delay fishing for scallops in this area until additional and more detailed data can be collected.

5.2.1.2.3 Alternative 3 – Allow scallop fishing in all parts of Closed Area I, north of the 43660 loran line.

This alternative differs from Alternative 2 in that the southern boundary of the area where scallop fishing would be allowed is a straight line that approximates the 43660 loran line, a boundary that the Habitat Committee identified as separating areas with primarily smooth sand bottom from areas with hard bottom and complex habitat. In addition, scallop fishing would be allowed in all parts of Closed Area I above this line. The northern boundary would therefore be the same as the boundary of Closed Area I (Figure 24).

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<sup>&</sup>lt;sup>16</sup> Only points SC3 to SC6 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of Closed Area I.



**Figure 19.** Boundaries of areas considered by the Groundfish Oversight Committee for scallop fishing in 2000, showing the relationship to yellowtail flounder stock areas. In Closed Area I, the 43660 loran line is the southern boundary of the Habitat Committee's recommendations for the area to be considered. The shaded area, south of the 43660 line is the southern boundary for Alternative 1. The southern boundary for Alternative 2 is an east-west line at 41°07' N latitude, approximately at the same latitude as the middle of the 43660 loran line.

Scallop vessels that are eligible to fish in the closed area(s) would be able to fish in Closed Area I within the boundaries described in Table 10. This area is shown as the central part of Closed Area I, labeled "Scallop Access" in Figure 22. Vessels with scallop permits (Section 5.2.10) would be eligible to fish a certain number of trips (Section 5.2.6) in Closed Area I from (dates to be determined) or whenever the catch exceeds either the scallop or yellowtail flounder TAC, whichever comes first.

Table 12. Alternative 3: Proposed boundary of the portion of Closed Area I for scallop fishing.

Point label <sup>17</sup>	North latitude	West longitude
SC3	41°04'30"	Western boundary of CA1
SC4	41°09'	68°30'
C14	41°30'	68°30'
Cl1	41°30'	69°23
SC3	41°04'30"	Western boundary of CA1

**Rationale:** This alternative is similar to Alternative 1 (Figure 22), but fishing for scallops would be prohibited from an area that is identified as hard and complex bottom in recent USGS side-scan survey charts. It also includes, however, the western edge of the Great South Channel and an area in the northern part of Closed Area I that was not included in the 1999 experimental fishery survey.

The southern boundary is a straight line, defined by latitude and longitude, that approximates the 43660 loran line (Figure 23), identified by the Habitat Committee as a line separating areas of primarily smooth sand habitat from areas of hard bottom and complex habitat. Although enforcement of the boundary would be somewhat more complicated and difficult to document, compliance would be relatively easy for fishermen that use loran C, because the boundary approximates the 43660 loran line. Due to the curvilinear nature of loran lines, very minor differences between the 43660 loran line and a straight line defined by latitude and longitude are unavoidable. Compliance by fishermen that navigate solely GPS, may however be a little more difficult than for Alternative 2.

Although scallops are abundant in some places with this bottom type, the Council considers hard and complex bottom as having more value for fish habitat than adjacent sandy bottom where scallops are located. Hard and complex bottom is vulnerable to damage by heavy scallop dredges and other towed fishing gear. It is therefore attractive to delay fishing for scallops in this area until additional and more detailed data can be collected.

Unlike Alternatives 1 and 2, however, scallop fishing would be allowed in deep water in the NW corner of Closed Area I and along the western edge of the Great South Channel. The former was not included in the 1999 experimental fishing survey and is generally not included in the annual R/V Albatross scallop survey either. The reason for the omission is that scallop biomass in this deep water is generally low, except for pockets known by some fishermen.

As for the western edge of the channel, the 1999 experimental fishery (Appendix II) found less scallop biomass than in other portions of Closed Area I. Although the yellowtail flounder bycatch was low in the August and September experimental fishery, the western side of the channel is closer to the center of abundance for the Cape Cod yellowtail flounder stock. This flounder stock is presently overfished and mortality is too high. Although the deep water was unsampled in the experimental fishery, other significant bycatch would be American Plaice, gray sole, and monkfish, all stocks that are overfished.

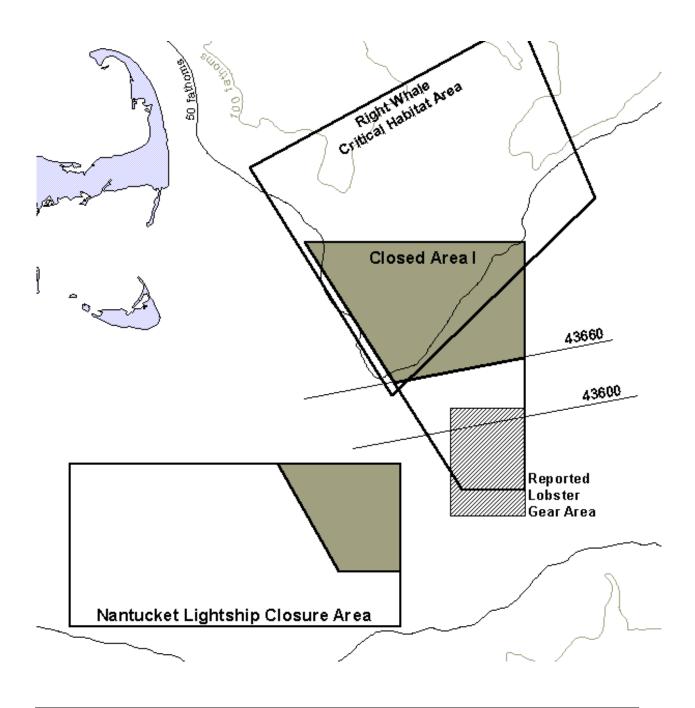
On the other hand, allowing scallop fishing in the NW corner of Closed Area I and along the western side of the channel would help to distribute fishing effort more widely, possibly avoiding an intensified scallop fishery in the smaller area created by moving the southern boundary of Alternative 1 to

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 $<sup>^{17}</sup>$  Only points SC3 and SC4 are new. Other points are labeled to correspond to points of reference in existing regulations describing the boundaries of Closed Area I.

the north. This action would otherwise squeeze roughly 400 scallop trips into a smaller area, depleting the resource in the accessible portion of Closed Area I and possibly preventing the fishery from catching the optimum yield for Closed Area I.

Allowing scallop fishing in the NW corner of Closed Area I could reduce intensive fishing in the shallower areas of Georges Bank, reduce the incentive for a derby-style fishery, and improve safety. These benefits could be greater than the potential cost of allowing fishing in an unsurveyed area and in an area with lower scallop biomass that is closer to the center of abundance for the Cape Cod yellowtail flounder stock.



**Figure 20.** Boundary of area for scallop fishing in Closed Area I for Alternative 3. The southern boundary, along a straight line along the 43660 loran line corresponds to the Habitat Committee's recommendation. The northern boundary of the area where scallop fishing would be allowed, corresponds with the boundary of Closed Area I. The chart also shows the location of the Right Whale Critical Habitat Area and the location where fishermen report prevalence of lobster gear.

### 5.2.1.3 Closed Area II

Two alternatives are under consideration for scallop fishing in portions of Closed Area II. Alternative 1 is a continuation of the access program during 1999 and Alternative 2 is an expansion of the portion open to scalloping. Both have the same seasons as the Council adopted during 1999. As of 1999, the area described by Alternative 1 and open to scallop fishing in 1999 contained 53 percent of the total scallop biomass in Closed Area II. Assuming that 3,678 mt of scallop catch occurs within Closed Area II during 1999, the proportion of biomass in this area is expected to decline to 40 percent of the biomass in all of Closed Area II (Table 12 in Framework Adjustment 12; NEFMC 1999c). Applying a TAC equal to 20 percent of biomass in all of Closed Area II in 2000 and assuming that it is removed from the area described by Alternative 1, the proportion of biomass will decline by the end of 2000 to 33 percent of the scallop biomass throughout Closed Area II. Eventually (possibly as early as 2000) the catch per day will decline to the point where it is not economic for many vessels to fish there compared to the profits they would realize by fishing in the open scallop areas.

### 5.2.1.3.1 Alternative 2 – Areas south of the HAPC boundary

Scallop vessels that are eligible to access the closed area(s) would be able to fish only south of the Juvenile Atlantic Cod Habitat Area of Particular Concern (HAPC) when they fish within Closed Area II. This area is shown as encompassing the portions of Closed Area II labeled "Alternative 1" and "Alternative 2" in Figure 13. Vessels with scallop permits (Section 5.2.10) would be eligible to fish a certain number of trips (Section 5.2.6) in Closed Area II from June 15, 2000 to December 31, 2000, or whenever the catch exceeds either the scallop or yellowtail flounder TAC, whichever comes first.

Table 13. Alternative 2: Boundary of the portion of Closed Area II for scallop fishing.

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Point label <sup>18</sup>	North latitude	West longitude
CII1	41°00'	67°20'
CII2	41°00'	66°35.8'
G5	41°18.6'	66°24.8' (US/Can)
H3	42°00'	67°00' (US/Can)
H4	42°00'	67°10'
H5	41°50'	67°10'
Н6	41°50'	67°20'
CII1	41°00'	67°20'
H3 H4 H5 H6	42°00' 42°00' 41°50' 41°50'	67°00' (US/Can) 67°10' 67°10' 67°20'

**Rationale:** Alternative 2 would allow scallop vessels more flexibility to fish in Closed Area II, potentially reducing the bycatch of yellowtail flounder and other species. This alternative is also more consistent with the Council policy for setting the Closed Area II TAC. Scallop catches would not decline as rapidly and more scallops would be available in the southern part of Closed Area II next year, compared to Alternative 1. The drawback is that habitat concerns are higher in this area, specifically with

<sup>&</sup>lt;sup>18</sup> Only points SC1 and SC2 are new. Other points are labeled to correspond to points of reference in existing regulations.

regard to the large sand ridges that occur in the center of Closed Area II. It is not clear, however, how much the scallop dredge fishing would disturb the sand ridges or how quickly these ridges would recover in the high-energy environment found on Georges Bank.

Only about 10 to 15 percent of the scallop biomass is between the current boundary (41°30' N latitude) and the HAPC. Access to scallops north of 41°30' N latitude would reduce fishing mortality on exploitable (and available) scallops by a small fraction. The Council should consider the effect of this marginal mortality reduction on available scallops against the potential for habitat impacts, bycatch interactions, and gear conflict. Other impacts such as reducing costs and higher prices from landing larger scallops from the central part of Closed Area II cannot be quantified during the time available.

### 5.2.2 Seasons

# 5.2.3 Alternative 1 – Continuous season when groundfish spawning is not occurring and the vulnerability of larval and juvenile groundfish is low

Scallop fishing by limited access and general category scallop vessels would be allowed during the following seasons:

Groundfish closed	Season when scallop fishing is	Earliest in-season	Based on vessel
area	allowed	adjustment	participation by
Nantucket Lightship Area	August 1, 2000 to February 28, 2001	November 1, 2000	October 1, 2000
Closed Area I	June 1 to November 30, 2000	September 1, 2000	August 1, 2000
Closed Area II	June 15 to December 31, 2000	October 1, 2000	September 1, 2000

The season in any area would be suspended for limited access or general category vessels when NMFS determines that either the scallop or yellowtail flounder TACs is or is projected to be exceeded. In-season adjustments to allocate more trips could be made, at the discretion of the Regional Administrator, on or after the dates given in the table above.

**Rationale**: Alternative 1 opens the areas to scallop fishing for the maximum amount of time without compromising spawning activity or affecting juvenile groundfish. This gives the greatest flexibility for fishermen to time the market, obtain the best price for the scallops, and avoid inclement weather. On the other hand, enforcing and monitoring the three areas simultaneously could hamper the program and increase the likelihood of non-compliance and exceeding the TACs.

## 5.2.4 Alternative 2 – Sequential openings of Nantucket Lightship Area, Closed Area I, and Closed Area II

Scallop fishing by limited access and general category scallop vessels would be allowed during the following seasons, but no two areas would be open at the same time:

Groundfish closed	Season when scallop fishing is allowed	Earliest in-season adjustment	Based on vessel participation by
Area Nantucket Lightship Area	August 1 to September 30, 2000	No in-season adjustment	
Closed Area I	September 15, 2000 to January 31, 2000	October 1, 2000	September 1, 2000
Closed Area II	June 15, 2000 to January 31, 2001	October 1, 2000	September 1, 2000

The season in any area would be suspended for limited access or general category vessels when NMFS determines that either the scallop or yellowtail flounder TACs is or is projected to be exceeded. In-season adjustments to allocate more trips could be made, at the discretion of the Regional Administrator, on or after the dates given in the table above.

**Rationale**: Alternative 2 opens the areas to scallop fishing for the maximum amount of time without having two areas open at the same time. It would, as a result, increase the ability to monitor and enforce the TACs, which for yellowtail flounder in some areas could be very low. The season for Nantucket Lightship Area, where the yellowtail flounder stock is in very poor condition, is constrained to the period for the 1999 experimental fishery when the yellowtail flounder bycatch in the NE corner of the Nantucket Lightship Area was almost non-existent.

Alternative 2 reduces industry flexibility and could have negative impacts on scallop prices, thereby reducing yield. It could also induce a derby-style fishery, as scallop vessels rotate en masse between the three areas to take the maximum number of authorized trips before each area is closed due to the shorter season or due to the fishery exceeding a TAC. Safety could also be compromised if certain areas were open only during the time when hurricanes and nor'easters are more frequent events. The shorter seasons would also make it more difficult to make in-season adjustments because of the necessary lag between data collection and when an announcement could be made.

## 5.2.5 Alternative 3 – Sequential openings of inshore and offshore areas

Scallop fishing by limited access and general category scallop vessels would be allowed during the following seasons, but no two areas would be open at the same time:

Groundfish closed	Season when scallop fishing is allowed	Earliest in-season	Based on vessel	
area		adjustment	participation by	
Nantucket Lightship Area	September 15, 2000 to January 31, 2001	December 1, 2000	November 1, 2000	
Closed Area I	September 15, 2000 to January 31, 2000	December 1, 2000	November 1, 2000	
Closed Area II	June 15 to September 14, 2000	No in-season adjustment		

The season in any area would be suspended for limited access or general category vessels when NMFS determines that either the scallop or yellowtail flounder TACs is or is projected to be exceeded. In-season adjustments to allocate more trips could be made, at the discretion of the Regional Administrator, on or after the dates given in the table above.

**Rationale**: Alternative 3 opens the areas to scallop fishing for the maximum amount of time without having an inshore area (Nantucket Lightship Area or Closed Area I) open at the same time as an offshore area (Closed Area II). It would, as a result, increase the ability to monitor and enforce the TACs, which for yellowtail flounder in some areas could be very low. It does however extend the season in the Nantucket Lightship Area until later in the year, compared with the other alternatives, and the expected bycatch rates are much more uncertain.

Alternative 3 is a compromise between the longer seasons in Alternative 1 and the short seasons in Alternative 2. It improves enforcement and monitoring because the areas that are simultaneously open are very close to each other. Also, the proposed seasons prevent a derby-style fishery from developing in Closed Area II during a time when bad weather is more prevalent. The added benefit of the proposed season is that the initial three trip allocation in Closed Area II is much more likely to take most of the scallop TAC, provided that the yellowtail flounder bycatch doesn't exceed its TAC. There is therefore

less reason to allow for an in-season adjustment for Closed Area II trips and even if the scallop TAC is not taken, this would be the second year of more intense fishing in the portion of Closed Area II that is accessible for scallop fishing<sup>19</sup>. Since the inshore/offshore characteristics dictate which vessels are likely to fish in these areas, Alternative 3 reduces the potential for a derby-style rotation as areas open and close.

## 5.2.6 Total Allowable Catch (TAC) of sea scallops (Framework 13)

No non-preferred alternatives would meet the optimum yield (OY) objective for Atlantic sea scallops. Under the current FMP, the Council defined OY as the amount of scallops that can be annually harvested while maximizing yield-per-recruit, which also serves as the overfishing definition threshold. According to Amendment 7, a lower target fishing mortality of 0.2 was chosen as a risk-averse strategy to prevent overfishing. While the overfishing definition and the mortality target apply on a stock-wide basis, the Council chose this strategy (i.e. maximum sustainable yield from the closed areas) and a TAC that is 20 percent of the expected biomass in the closed areas until an area-based management strategy is developed in Amendment 10.

### 5.2.7 TAC set asides (Framework 13)

## 5.2.7.1 One-percent set aside for funding observers

One percent of the scallop TAC for each of the groundfish closed areas would be set-aside to pay for observers as described in Section 5.2.16. NMFS may authorize vessels that carry observers to land more than 10,000 lbs. of scallop meats (i.e. more than the scallop possession limit) with the additional revenue used to pay for the observer at a rate determined by the NMFS. NMFS will monitor the landings from limited access scallop vessels that fish in the closed area and close the fishery when the landings exceed or are projected to exceed the overall scallop TAC, reduced by this and other set-asides. Accounting for all three set-asides, the TAC that will apply to landings from limited access scallop vessels would be 93 percent of the total (Table 8). The set aside to pay for observers would total 191,000 lbs. (87 mt).

**Rationale**: One-percent of the TAC from Closed Area II was insufficient for the additional landings on observed trips. Vessels with an observer onboard were authorized to land an amount of scallops above the 10,000 pound scallop possession limit that would provide sufficient revenue to pay the daily cost of the observer. To provide 25 percent observer coverage, the additional landings exceeded the one-percent limit chosen by the Council in Framework Adjustment 11. In that case, exceeding the TAC to fund observers had no bad effects, since the fishery concluded due to the yellowtail bycatch rather than due to the scallop landings exceeding the TAC.

## 5.2.7.2 TAC set-asides for scallop landings by vessels with General Category scallop permits

The Council initially considered a TAC set aside as high as 10 percent of the scallop TAC in each area to accommodate fishing by vessels with general category permits, with a mid-season re-allocation if the general category vessels were not landing the entire TAC set aside. Since this is a new provision, the

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<sup>&</sup>lt;sup>19</sup> The scallop TAC is based on the projected biomass of scallops in each of the three groundfish closed areas. In Closed Area II, only about ½ of the scallop biomass is vulnerable to fishing since the upper half of the area will remain closed. Due to the localized overharvest and continuing survival of scallops in the northern half of Closed Area II, only about 1/3<sup>rd</sup> of the scallop biomass is estimated to be in the southern half of Closed Area II after the 2000 fishery.

Council was unable to predict how many vessels will take advantage of the opportunity or how much of the TAC should be allotted to this category of vessels.

**Rationale**: If the Council chose a high TAC and few vessels participate in the general category program, then it would prevent the fishery from harvesting the scallop TAC. Otherwise, the difference between the general category vessel landings and the TAC set aside would have to be re-allocated during the season. This re-allocation would require that access to the areas concluded before the end of the season in each area for general category vessels and the season for limited access vessels would be less predictable.

Comments at the framework meetings favored a lower TAC set aside for general category vessels that fish in Closed Area I and the Nantucket Lightship Area. Initially, there was support for a two-month season, even with the lower allocation. Recommendations by the Groundfish PDT and further evaluation by the Groundfish Oversight Committee showed that there was no reason to limit the season for a shorter period than the access provided for limited access vessels. The Groundfish Oversight Committee recommended that as long as the yellowtail flounder bycatch on these vessels was monitored with sufficient observer coverage and the bycatch counted against the yellowtail flounder TAC, the season could be the same for both general category and limited access scallop vessels.

To allow for more than a two-month season for access by general category vessels and not set an overly-high TAC set aside, the Council reduced the set-aside to five percent with no mid-season reallocation.

## 5.2.8 Yellowtail Flounder TAC and Triggered Area Closure (Framework 34)

The yellowtail flounder TACs would be allocated on a stock-by-stock basis. Using the same formulas as approved for the proposed action, the stock-based allocations would be 50 mt for the Southern New England yellowtail flounder stock, 32 mt for the Cape Cod yellowtail flounder stock, and 693 mt for the Georges Bank yellowtail flounder stock (Table 30). The Southern New England and the Cape Cod yellowtail flounder TACs would apply to Nantucket Lightship Area and Closed Area I, respectively. The Georges Bank yellowtail flounder TAC would, on the other hand, be spilt between Closed Area I and Closed Area II, because the distribution of this stock overlaps both areas.

**Rationale**: This procedure for setting and monitoring TACs would ensure that the framework adjustment met the conservation goals for each yellowtail flounder stock individually. The Council, however, deemed that it was administratively too complex to monitor a separate TAC for Cape Cod yellowtail flounder in the western part of Closed Area I and it was not important where the scallop vessels caught Georges Bank yellowtail flounder as long as the catch did not exceed the total for the stock.

## 5.2.9 Effort limits (Framework 13)

#### 5.2.9.1 Trip Allocations

Each full-time and part-time scallop vessel will be authorized to fish a certain number of trips within parts of each of the three groundfish closed areas or within an adjacent during the time each area is open for scallop fishing. The range of non-preferred options included zero to two trips in the Nantucket Lightship Area, one to two trips in Closed Area I, and two to four trips in Closed Area II. These options corresponded to scallop possession limit options ranging from 18,000 to 8,000 pounds, respectively.

The Regional Administrator may make an in-season re-allocation of closed area trips no earlier than mid-season, based on the number of vessels that participate and the number of trips taken, if each trip catches the scallop possession limit. Vessels must have fished at least one trip before that date to receive additional trips.

In the Nantucket Lightship Area, the adjustment date would be no earlier than November 15, 2000, and vessels that make at least one trip by November 14, 1999 would be eligible. In the Closed Area I and in Closed Area II, the adjustment date would be no earlier than October 1, 2000, and vessels that make at least one trip by September 1, 2000 would be eligible

**Rationale:** The allocation of trips shown in Table 15, with the associated day-at-sea tradeoffs, will be conservation neutral (Section 6.2.6.1.10). This allocation will also allow a scallop possession limit that is sufficiently high to encourage vessels to fish for scallops in the closed area while not exceeding the TACs for scallops in the groundfish closed areas.

Allocations of more trips would require the Council to reduce the scallop possession limit to levels that might not be attractive, compared to scallop fishing for similar days-at-sea in the existing open areas. Allocations of fewer trips with the same day-at-sea tradeoffs would not be conservation neutral, because of the potential for vessels to use unused days-at-sea to fish in the closed areas The Council considered a broad range of trip allocations and scallop possession limits (Section 6.2.6.1.10).

## 5.2.9.2 Day-at-sea restrictions and tradeoffs

Vessels that report VMS positions within a groundfish closed area while on a scallop day-at-sea will automatically accumulate a certain number of days-at-sea or the actual time at sea, whichever is more. The day-at-sea accumulations range from seven days with an 8,000 pound scallop possession limit to 21 days with an 18,000 pound scallop possession limit.

A scallop vessel that fishes within a groundfish closed area and catches the scallop possession limit (10,000 pounds) in six days, for example, would accumulate 12 scallop days-at-sea for the trip. Even if the trip lasted only eight days, the trip would 'cost' twelve days-at-sea. A vessel that took five days to steam to and from port (e.g. a vessel from VA) would accumulate 13 days-at-sea for the trip, since the trip lasted more than 12 days.

**Rationale:** Assessing a higher number of days-at-sea for a closed area trip is a conservation measure that makes up for the higher scallop catch rate in the closed area. Scallops are not only larger in the closed area, they are also more abundant. A scallop dredge will therefore catch more scallops (in number) per day-at-sea than if it fished in the areas now open for scallop fishing. To make up for this higher availability, a vessel will accumulate more days than the trip's actual duration, especially if it catches the scallop possession limit in a short time.

The purpose of a day-at-sea accumulation that is greater than the trip length is to ensure a conservation-neutral strategy. Without this mechanism, the higher abundance in the closed areas would enable a vessel to catch more scallops per day-at-sea, increasing fishing mortality. In addition to this effect, the day-at-sea tradeoff for fishing in the closed areas must make up for increased fishing effort caused by the additional opportunity and for the ability of some vessels to use otherwise unused days-at-sea while fishing in the closed areas. These effects are explained in more detail in Section 6.2.6.1.10.

Because of additional time that vessels would take to harvest a higher scallop possession limit, the day-at-sea accumulation must also increase to compensate for the added trip duration. The higher scallop possession limit equates to fewer trips to harvest the TACs and greater day-at-sea tradeoffs.

## 5.2.9.3 Maximum trip length

Vessels on a scallop day-at-sea will be prohibited from remaining within a closed area or an adjacent buffer zone for more than the number of days-at-sea charged for the closed area trip, unless authorized to do so under an experiment or to catch scallops under the research TAC set aside (Section 5.1.13). Once it leaves, the vessel will not be able to re-enter the area during the same trip.

**Rationale**: This restriction is necessary to prevent vessels from taking longer trips than they would automatically accumulate by fishing in the closed areas. Although the estimates indicate that the scallop vessels will be able to catch the scallop trip limit well before 10 days, this measure could also dissuade vessels from transferring their scallops to another vessel and continue fishing for longer periods.

## 5.2.10 Eligibility (Framework 13)

No alternatives except the proposed action was considered in this framework adjustment, because there is no justification for excluding limited access scallop vessels and the fleet is highly mobile. Vessels in the Mid-Atlantic are less likely to fish in the groundfish closed areas, due to their distance from home ports, but many vessels travel and land their scallops in a variety of ports when the situation demands it.

## 5.2.10.1 Net boats may fish in the groundfish closed areas with dredges and continue using trawls in all other areas open to scallop fishing

The Council considered other options, including preventing scallop vessels from using trawls in the future if they use dredges in the groundfish closed areas. Due to differences in size selectivity, the Council believes that vessels using trawls incur more fishing mortality on a day-at-sea than vessels that use dredges. Originally, the Council allowed these vessels to continue using trawls to fish for scallops because many were not equipped to use dredges. Forcing the vessels to use dredges could create safety problems if the modification made the vessels less seaworthy. If the vessel uses a dredge in the groundfish closed areas, however, the vessel presumably is capable of fishing with dredges in any area.

The Council decided at this time to make no changes in this special eligibility to use trawls outside of the groundfish closed areas. The issue of the differential size selection and mortality with the different gears may be addressed by a future plan amendment.

## **5.2.10.2** Vessels with General Category Permits

5.2.10.2.1 Alternative 1 – Vessels with General Category permits would be prohibited from fishing in the groundfish closed areas

If fishing in an exempted fishery<sup>20</sup> or during a multispecies day-at-sea, vessels with a general category scallop permit will not be eligible to fish in the re-opened closed areas. Vessels with general category scallop permits, however, will be able to retain up to 400 pounds of scallop meats in the

<sup>&</sup>lt;sup>20</sup> Including the Gulf of Maine exemptions specified in §648.80(a)(10).

demarcation area, even during the closed area fishery. Vessels without limited access or general category permits will be able to retain and land up to 40 pounds of scallop meats, consistent with current regulations.

**Rationale:** General category scallop permits were intended to accommodate a small amount of scallop bycatch associated with some fishing activities and small-boat inshore fisheries that target scallops. The Scallop FMP currently allows vessels with this open access scallop permit to retain and land no more than 400 pounds of scallop meats. Since the implementation of Amendment 4, some vessels have used this opportunity to use small dredges near shore to target scallops. Since the groundfish closed areas are offshore and are closed to discourage groundfish catches, there is no reason to allow access to the reopened areas to either type of vessel.

If the vessel with a general category scallop permit is using it to land scallop bycatch, the vessel is fishing for other species, contrary to the need for this action. If the vessel is targeting scallops, it will be uneconomic to fish for scallops so far from shore. Additionally, there would be no mechanism to account for days used (Section 5.1.11.1) that would apply to vessels with limited access scallop permits, if they fished in the re-opened areas under the 400-pound trip limit. Since any type of vessel may obtain a general category scallop permit, allowing any vessel with a general category permit to fish within Closed Area II would unreasonably increase enforcement and administrative costs.

This alternative would avoid the need for mandatory reporting requirements to monitor compliance with the closed area regulations. Many of the vessels with General Category permits would be required to obtain expensive vessel monitoring systems (VMS), comply with the reporting requirements, and carry observers to fish for scallops in the closed areas. The VMS program would be needed to monitor compliance with the area access provisions and buffers. The added reporting requirements and observers would be needed to monitor compliance with the TAC and determine when it would be necessary to halt access to the closed areas. Due to the high number of potential participants, these problems are significant hurdles. In addition to increasing cost, the new reporting requirements for these vessels would require a time-consuming Paperwork Reduction Act analysis to allow access by General Category vessels.

This alternative would also limit the number of vessels that would be exempt from the groundfish closed area regulations, easing the law enforcement burden. The addition of general category vessels could double the number of vessels fishing for scallops in the closed areas and increase the opportunity for limited access vessels to evade the trip limit regulations.

In addition to the PRA and reporting issues discussed above, vessels operating with a general category permit are not currently exempt from the groundfish small mesh regulations. Cursory examination of the SAFE report revealed that general category vessels that use dredges had groundfish landings that exceeded the five-percent tolerance, used to justify an exemption from the groundfish regulations. Landings of groundfish for trips landing less than 400 lbs. of scallop meats were about 10 percent of the landings of scallops (NEMFC 1999b). Either a special exemption would be needed in this framework adjustment, or these vessels would have to show that their catch met the five-percent criterion.

Within an external buffer zone (Section 5.2.12), vessels with general category permits could legally fish for other species and have a legitimate scallop bycatch. Continuing the current regulations for these vessels in the buffer zones would satisfy National Standard 9 concerns, without jeopardizing the enforceability of the scallop possession limit that will apply to limited access scallop vessels on a closed area trip.

## 5.2.10.2.2 Alternative 2 – Allow vessels with General Category permits to fish for scallops in the groundfish closed areas with added reporting requirements

Vessels with a General Category Scallop permit would be authorized to fish in the Nantucket Lightship Area or in Closed Area I during times and in portions that are accessible to vessels with limited access scallop permits. These vessels would be prohibited from possessing more than 400 lbs. of scallop meats or 50 U.S. bushels of shell stock, consistent with current regulations. Vessels with general category permits<sup>21</sup> that fish for scallops in the closed areas would be required to comply with all reporting requirements, gear restrictions, bycatch limits, and all other requirements that apply to limited access vessels that fish in the closed areas, including VMS, observer coverage, and trip notification requirements.

Vessels with limited access scallop permits would alternatively be allowed to fish and land greater amounts of scallops on authorized trips, but would not be allowed to fish for scallops in the closed areas during other trips utilizing its General Category scallop permit<sup>22</sup>.

**Rationale:** Some vessels with general category scallop permits have targeted scallops during favorable conditions close to shore. Unlike Closed Area II, the other two groundfish closed areas are within the range of smaller vessels that could make day trips and profitably land 400 pounds of scallops. This alternative would enable these vessels to realize the benefits of the four-year closure and the rebuilding biomass of scallops in these closed areas. No quantitative analysis of this measure was attempted, because of the PRA and exemption issues identified in Section 5.2.10.2.1 and because of sparse data for vessels targeting scallops with general category permits.

## 5.2.11 Gear Restrictions (Framework 13)

## 5.2.11.1 Twine Tops and Dredges – status quo

Any vessel with a general category or limited access scallop permit that fishes in Nantucket Lightship Area, Closed Area I, or Closed Area II must use a scallop dredge with a twine top having diamond mesh no smaller than 8-inches (25.40 cm). This mesh may be hung on the square or the diamond within the area of the dredge occupied by the twine top. The mesh will be measured using the methods described in §648.51(a)(2)(iii).

**Rationale**: The status quo would allow vessels to use commonly available twine tops while fishing in the closed areas. This minimum twine top mesh regulation became effective on December 9, 1999 and applies to all limited access scallop vessels using dredges. Bycatch would be higher than the proposed action, because a 10-inch mesh twine top would allow more finfish to escape capture by the dredge.

## 5.2.11.2 Other gear modifications to reduce bycatch

The Council may include restrictions on the configuration of the dredge or its components to reduce bycatch based on industry advice. Other than the larger twine top identified in the previous

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<sup>&</sup>lt;sup>21</sup> This does not include vessels with a limited access scallop permit that fish in the closed areas during an authorized trip.

<sup>&</sup>lt;sup>22</sup> Many limited access scallop vessels also possess a General Category scallop permit to accommodate scallop bycatch while they are fishing for other species. Some vessels also target scallops while not under a day-at-sea under this permit.

section, there are no known and proven bycatch reduction devices that would be effective at reducing finfish bycatch without significant losses of scallops. Some research, for example on funnels, ticklers, and other types of finfish excluders has been promising and proposals for an experimental fishery in areas with large scallops to test gear modifications for reducing bycatch or habitat impacts should be encouraged.

Industry on the other hand apparently has an opportunity to voluntarily reduce finfish bycatch under this program. Two changes in fishing and gear handling have the potential for reducing finfish bycatch without significantly reducing scallop catch. The impacts of both of these practices is discussed in more detail in Framework Adjustment 11 (NEFMC 1999a; Section 8.1.1.2.4.2).

One method is to simply tow the dredges slower than the current 4.5 knot standard. The reason for the higher towing speed is to cover more fishing area and catch more scallops per tow. In the closed areas, the scallop biomass is high enough that vessels will be able to catch enough scallops so that their landing are constrained by the scallop trip limit and the vessel's shucking capacity, not by the catch rate. If the vessels towed the gear slower, they would catch less per hour, but that would balance the shucking capacity and (for Alternative 1 only) there would be no cost to extend the trip to 10 days.

A second method to reduce finfish bycatch arose during evaluation of the experimental fishery. Some researchers and fishermen that had observed films of scallop dredging thought that letting the dredge sit stationary on the bottom for a few minutes prior to hauling the gear back would also significantly reduce bycatch. Even if the yellowtail flounder bycatch was reduced by half, it could keep the total yellowtail flounder catch under its TAC.

**Rationale:** No proposals were raised that could be enforced during the development of Framework Adjustment 11. Changes in fishing operations, however, could be very effective in reducing bycatch and the Council encourages the industry to voluntarily explore and adopt ways to reduce bycatch.

## 5.2.12 Buffer zones (Framework 13)

# 5.2.12.1 Alternative 1 - External buffer zones where closed area regulations apply

Any vessel on a scallop day-at-sea within a buffer zone, as described for Closed Area II below, will be considered to be on a closed area trip and the regulations for fishing for scallops in Closed Area II (scallop possession limit, automatic x day-at-sea accumulation, x-day maximum trip length, 10-inch twine top mesh, etc.) also apply. Any vessel<sup>23</sup> that is not on a scallop day-at-sea (including vessels with limited access scallop permits) can retain up to 400 pounds of scallop meats if it has a scallop general category scallop permit or 40 pounds of scallop meat if it does not have a general category scallop permit.

Buffer zones and the closed area regulations for scallop vessels would expire when scallop vessels are again prohibited from fishing within an adjacent groundfish closed area, either when the season closes according to this framework adjustment, or when the closed area scallop fishery is suspended for exceeding the yellowtail flounder TAC (Section 5.2.7).

The boundaries of the buffer zone surrounding Closed Area II are described in Table 14 and shown in Figure 25. No boundaries have been specified for Nantucket Lightship Area or Closed Area I,

<sup>&</sup>lt;sup>23</sup> Assuming the vessel is legally fishing in an exempted fishery or during a multispecies day-at-sea.

because of the anticipated negative impacts of an overlapping buffer zone, close to shore and in a prime scallop resource area. A buffer of about 15 nm, could be constructed on the inshore boundary of Closed Area I and the Nantucket Lightship Area to reduce the opportunity to evade the closed area regulations and to mitigate the habitat and bycatch impacts. These areas would, however, overlap and effectively close important scallop areas.

Table 14. Boundary of the scallop buffer zone adjacent to Closed Area II.

The second P	the seamon same zone adjacent to crosed rica ii.									
Point	North latitude	West longitude								
label <sup>24</sup>										
DA1	40°24'	67°40'								
DA2	40°24'	EEZ								
DA3	40°26.5' (US/Can)	EEZ								
G5	41°18.6'	66°24.8' (US/Can)								
CII2	41°00'	66°35.8'								
CII1	41°00'	67°20'								
DA2	42°12'	67°20'								
DA3	42°12'	67°40'								
DA1	40°24'	67°40'								

 $<sup>^{24}</sup>$  Only points DA1, DA2, and DA3 are new. Other points are labeled to correspond to points of reference in existing regulations.

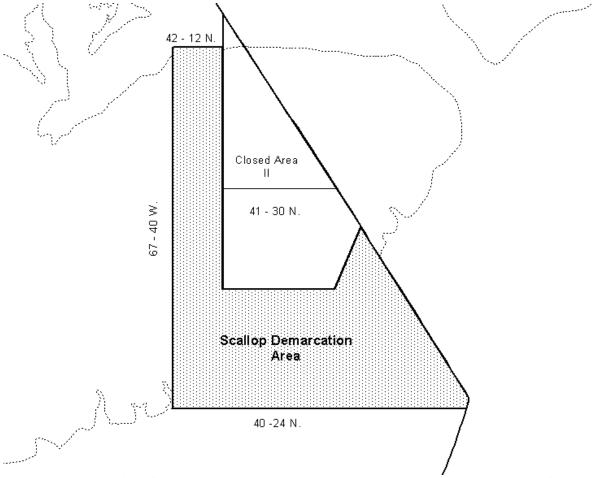


Figure 21. Boundaries of the Georges Bank scallop demarcation area where the closed area fishery regulations apply to any vessel fishing during a scallop day-at-sea. Closed area trips may be taken in the scallop buffer zone and in the portion of Closed Area II that lies south of 41°30' North latitude.

**Rationale:** The main purpose of a buffer zone is to reduce the potential for transferring scallop catches at sea or fishing within the closed area during short periods between times when the vessel's location is determined by the VMS system.

Without the buffer zone, two vessels could fish right to each other, one with a scallop possession limit and the other with no limit on the amount of scallops that could be on board. While a buffer zone simply moves this problem further west, vessels fishing within the buffer zone have less incentive to transfer its scallops to another vessel fishing nearby. At its closest point, the boundary of the buffer zone for Closed Area II is about 20 nautical miles from the boundary of the area re-opened for scallop fishing. It would therefore take about one to two hours for two vessels to meet in the demarcation area, enough time for the VMS to document that the vessel on a closed area trip had left the area, terminating the trip and accumulating ten days-at-sea. Re-entering the Closed Area would be prohibited, or at the very least, trigger an accumulation of another 10 or more days-at-sea.

Another effect of a buffer is to reduce scallop fishing effort in adjacent areas with smaller scallops and high bycatch of Georges Bank yellowtail flounder. Daily catch reports from scallop vessels on Closed Area II trips indicate little activity within the buffer zone, except for some trips that report their

catches on the way to port after leaving Closed Area II. Anecdotally, the buffer zone has been so effective at reducing fishing effort adjacent to Closed Area II, that fishermen have indicated an interest in saving a portion of their annual day-at-sea allocations to re-enter this area when the Closed Area II fishery closes. They anticipate finding higher catches and larger scallops in this zone, which has been essentially unfished for five to six months. Coupled with the abundant year-class first observed in the 1998 research survey, the catches when the buffer zone becomes less regulated could be substantial. Many vessels however are running short of days at the end of 1999, because of having only 120 days to fish or because of using up to 60 days-at-sea to fish in Closed Area II. The catch rates in the buffer zone surrounding Closed Area II could be higher than when the Closed Area II fishery opened, but the total catch may be restrained by the availability of days-at-sea. This delayed fishing mortality, if as effective as it appears, could translate into improved yield during the beginning of the 2000 fishing year.

No formal analysis of the buffer zone effect could be completed, due to the availability of data and insufficient time. The full conservation effect of the buffer zone surrounding Closed Area II cannot be calculated until the catches of scallops and finfish for 1999 are available. The biological benefits of the buffer zone will also become apparent when scallop vessels begin fishing there again. The benefit for enforcement, however, appears to have been compromised by the opportunity for boats without VMS systems to enter the closed area. The U.S. Coast Guard reports that "illegal transfers at sea of scallops . . . are occurring with regularity." Furthermore, "recipient boats have become something of a cottage industry." (Appendix V).

The PDT evaluated the establishment of buffer zones surrounding the accessible areas of Nantucket Lightship Area and Closed Area I. The concensus on buffer zones was that the broad buffer zone around Closed Area II, while originally intended to improve enforcement, would have a measurable biological and economic benefit from the reduced fishing effort in this zone. The benefit could not be quantified, however, since the buffer zone had not yet been surveyed since it went into effect and because the Closed Area II fishery is still underway. For Closed Area II, therefore, the PDT recommended continuing the current buffer zone policy should apply in 2000 if access is again granted to scallop vessels.

For Nantucket Lightship Area and for Closed Area I, on the other hand, external buffer zones would severely impact the scallop fishery in the important South Channel area. The PDT felt that this option would not be acceptable to the fishing industry and that failure to approve access would prevent the opportunity to shift fishing effort from the smaller scallops in open areas to the larger scallops in the closed areas.

## 5.2.12.2 Alternative 2 - Internal no-fishing areas

A two mile strip inside the periphery of the groundfish closed areas would exist inside the boundary of the groundfish closed areas. This measure would be tied to increasing the polling frequency for the VMS system (Section 5.1.10.4) to enhance the monitoring capability for closed area access.

**Rationale:** The no-fishing area would help to monitor compliance with the closed area regulations compared to having no buffer between the portions of the closed areas open to scalloping and other fishing areas, but it would have little conservation benefits. Increasing the VMS polling frequency was thought to be too costly to help enforcement with the small, internal no fishing zone around and inside the edges of the closed areas where scallop access might be permitted.

#### 5.2.13 Possession limits

## 5.2.13.1 Scallop meats – single limit for access to all groundfish closed areas (Framework 13)

A single possession limit, between 8,000 and 18,000 lbs. of scallop meats, would apply to vessels on a closed area trip, regardless of which area the vessel fished. The number of trips that can be allocated and the day-at-sea tradeoffs vary over this range of possession limits. A summary of these relationships is given in the table below.

**Table 15.** Trip allocations, conservation-neutral day-at-sea tradeoffs, and predicted net benefits for various possession limit options for trips by limited access scallop vessels that fish in the groundfish closed areas.

	Numbe	Number of trips / day-at-sea tradeoff							
Possession limit	Nantucket			Net benefits					
option	Lightship Area	Closed Area I	Closed Area II	(million)					
8,000	2/8	2 / 7	4 / 10	\$35.7					
10,000	1 / 10	2/9	3 / 12	\$37.7					
12,000	1 / 12	1 / 11	3 / 14	\$35.5					
15,000	1 / 15	1 / 14	2 / 17	\$39.3					
18,000	0 / -	1 / 18	2 / 21	\$29.3					

**Rationale:** The purpose of a single possession limit is to ease the law enforcement burden of monitoring a unique trip limit for each closed area. A wide range of options is considered to explore ranges that are profitable to industry and low enough to provide reasonable access to limited access vessels, while being conservation neutral with respect to scallop fishing mortality, habitat, and other species that are normally captured as bycatch. Five options within this range were analyzed: 8,000; 10,000; 12,000; 15,000; and 18,000 pounds of scallop meats. The analysis of trip allocations associated with each option is presented in Section 6.2.6.1.7 and the analysis of conservation-neutral day-at-sea tradeoffs associated with each option is given in Section 6.2.6.1.10.

## 5.2.13.2 Shellstock – 50 US Bushels (Framework 13)

Any vessel will be prohibited from possessing more than 50 US bushels of shell stock when it leaves a groundfish closed area or an adjacent buffer zone. For purposes of enforcing the scallop trip limit, 50 US bushels of shell stock shall be counted as 400 pounds of scallop meat.

**Rationale:** The purpose of this measure is to prevent vessels from catching more than the scallop trip limit allows and discarding the excess scallops in port. It will also ease the enforcement burden caused by the potential for partial offloadings as scallops are shucked in port. On the other hand, it is necessary to allow some landings of shell stock to satisfy a market for large, live scallops.

## 5.2.13.3 Possession Limits for Regulated Multispecies

5.2.13.3.1 Alternative 1 - 500 pounds per trip

While portions of Closed Area II are open to scallop fishing, scallop vessels on a closed area trip (i.e. vessels with a VMS position report within one of the groundfish closed areas or a buffer zone) may retain and land up to 500 pounds of regulated species. On trips with a certified observer aboard (Section 5.2.16), the vessel may retain and land any amount of regulated species, but the revenue from the sale of more than 500 pounds of regulated species shall be donated to a bona-fide charity. The Regional Administrator is authorized and requested to make a mid-season adjustment to this possession limit and reduce regulatory discards to the maximum extent possible.

**Rationale:** This measure would increase the groundfish trip limit to accommodate the expected bycatch of large mesh regulated species. Raising the trip limit would avoid economic waste and partially address National Standard 9 concerns. Since some discarded fish survive, unreasonable increases in the trip limit could however increase mortality on overfished groundfish stocks and promote continued fishing when the scallop catch rates decline.

The expected bycatch of regulated species far exceeds the existing 300 pound possession limit. On the other hand, the Council wants to avoid creating an incentive for scallop vessels to fish in areas where the groundfish bycatch is high or to continue fishing for groundfish when the vessel reached its scallop possession limit. Increasing the regulated species possession limit from 300 to 500 pounds will decrease regulatory discards, but will not encourage fishing for groundfish or discourage efforts to avoid bycatch. If all 328 active vessels fish for scallops on six closed area trips, for example, this adjustment would reduce regulatory discarding by 393,600 pounds.

#### 5.2.13.3.2 Alternative 2 - 1,000 pounds per trip

While portions of Closed Area II are open to scallop fishing, scallop vessels on a closed area trip (i.e. vessels with a VMS position report within one of the groundfish closed areas or a buffer zone) may retain and land up to 1,000 pounds of regulated species. On trips with a certified observer aboard (Section 5.2.16), the vessel may retain and land any amount of regulated species, but the revenue from the sale of more than 1,000 pounds of regulated species shall be donated to a bona-fide charity. The Regional Administrator is authorized and requested to make a mid-season adjustment to this possession limit and reduce regulatory discards to the maximum extent possible.

**Rationale:** This measure would increase the groundfish trip limit to accommodate the expected bycatch of large mesh regulated species. Raising the trip limit would avoid economic waste and partially address National Standard 9 concerns. Since some discarded fish survive, unreasonable increases in the trip limit could however increase mortality on overfished groundfish stocks and promote continued fishing when the scallop catch rates decline.

During the Closed Area II fishery in 1999, the average yellowtail flounder bycatch was over 1,300 pounds per trip. There was insufficient information available during deliberations to evaluate the distribution, but the mode<sup>25</sup> is likely to be somewhat less, since the average is often affected by a few trips with very high catches. Since these fish could not be landed and scallop landings were generous, there was no incentive to target yellowtail flounder or any other groundfish species. In fact, there was a strong incentive to try to avoid catching yellowtail flounder until the end of the year when vessels were trying to get in their remaining trips before the Closed Area II would be closed on the basis of the yellowtail flounder TAC.

<sup>&</sup>lt;sup>25</sup> The mode is a statistical measure where 50 percent of the observations occur above that value.

Even though the 1999 experimental fishery indicated much lower bycatch rates for yellowtail flounder in the Nantucket Lightship Area and in Closed Area II, there still would be little incentive for limited access scallop vessels to target groundfish in the closed areas. The strongest incentive will probably operate like the early part of the 1999 Closed Area II fishery. Because of this strong incentive to avoid groundfish during scallop fishing, especially yellowtail flounder, there is no reason to limit the landings below the average catch level. A lower possession limit, like Alternative 1 or the status quo (300 lbs.) would increase discarding and waste, without having much benefit by keeping groundfish mortality at a minimum. In this case, other factors take the place of the effectiveness of a groundfish possession limit.

#### 5.2.13.4 Possession Limit for Monkfish

Like the proposed action for the regulated multispecies possession limit, a higher possession limit for monkfish bycatch would be allowed to accommodate increased bycatch in the groundfish closed areas and reduce regulatory discarding.

**Rationale:** The Council rejected higher monkfish possession limits because the expected bycatch of monkfish is less than the allowance (300 pounds tail-weight per day-at-sea) for scallop dredges. An adjustment is therefore unnecessary.

## 5.2.14 Enforcement Provisions (Framework 13)

The alternatives that the Council considered for enforcement provisions were implemented in 1999 during the successful Closed Area II fishery. The Council therefore adopted the status quo for everything with the exception of the VMS polling frequency. The only provision that did not improve enforceability was the buffer zone around Closed Area II. While there were biological benefits for the temporary protection afforded by the buffer zone, the Enforcement Committee found that there was no improvement in enforceability. From one point of view, the buffer zone complicated enforcement by requiring a scallop possession limit for some trips that never entered the closed area.

Based on this finding, the Council did not adopt a buffer zone surrounding the closed areas while they were open to scallop fishing. In place of this provision, originally intended to discourage transfers at sea, the Council improved enforceability of the closed area access program by increasing the polling frequency (Section 5.1.10.4).

## 5.2.14.1 VMS polling frequency – Status quo

Limited access scallop vessels and other general category vessels that installed or used existing VMS equipment to participate in the groundfish closed area scallop fishery would be polled an average of one time per hour. The actual time of polling to determine the position of a vessel's VMS is randomized to prevent a vessel from knowing exactly when it is being polled.

**Rationale**: The status quo would require no programmatic changes and would not increase cost for either administration or for the scallop vessels. This polling frequency was originally intended to determine when a vessel was at sea or at the dock, instead of monitoring closed areas. This polling frequency may not be sufficiently short to prevent vessels from illegally entering the closed areas to transfer scallops from eligible vessels. Such an activity would circumvent the scallop possession limit.

## 5.2.15 Reporting Requirements (Framework 13)

The reporting requirements would extend and expand to other groundfish closed areas the existing requirements for vessels fishing for scallops in Closed Area II. The Council, therefore, chose a status quo alternative thant continued the successful program in the 1999 Closed Area II fishery. During the development of Framework Adjustment 13, no new alternatives were identified at the framework meetings.

## 5.2.16 Observers (Framework 13)

## 5.2.16.1 Alternative 2 – Mandatory observer coverage on less than 25 percent of closed area trips

The observer program to monitor the scallop and yellowtail flounder TACs would be reduced below 25 percent to shift resources and collect more detailed data, useful to managers and the industry during access to closed areas. The sampling frequency could be as low as 10 percent, similar to the Sea Sampling Observer Program for monitoring interactions with marine mammals by vessels using gears to which the mammals are particularly vulnerable.

**Rationale:** Sampling frequencies lower than 25 percent of all closed area trips could allow the collection of more detailed data needed by managers and the industry. If fewer resources were devoted to manning the observer program at a high sampling level, perhaps the focus could shift to collecting more useful data, without significantly compromising the accuracy of the yellowtail flounder and scallop TAC monitoring.

The observer program for the 1999 Closed Area II scallop fishery required the use of many new observers with modest training and skills, with directions to primarily observe and record scallop and finfish catches. More detailed data about gear characteristics and fishing practices could be helpful in determining any in-season changes that are needed or methods that the industry could use to reduce their impacts while fishing in closed areas.

Dr. William DuPaul is operating a more detailed observer sampling program on some trips in Closed Area II, funded by the research TAC set aside. This program is part of a nested design strategy to estimate the fleet fishing characteristics using vessel trip report (census) and regular observer data (subsampling at a higher frequency). Collecting this detailed data, however, slows the fishing operations and increases cost. Often more than one observer is aboard and fishing operations must be slowed to allow the observers to collect the needed data. For this reason, this program compensates the vessels for the delay and cost of the observers by allowing the vessel to land more scallops counted against the research TAC set aside.

Due to the detailed nature of this data and limited resources, <sup>26</sup> in-season analysis to change management regulations or promote changes in fishing practices is not possible. This data will, however, be very important to evaluate and estimate the impacts of future closed area access programs.

The PDT was unable to recommend a specific sampling intensity for this program, as requested to do by the Scallop Oversight Committee. The Council has not identified what accuracy is acceptable for monitoring the TACs and the costs of a more intensive sampling strategy are unknown. A 25 percent

<sup>&</sup>lt;sup>26</sup> Analyzing data during the data collection program would divert resources away from data collection during crucial periods of time.

frequency is usually a high sampling intensity for most random subsamples, however. The Sea Sampling Observer Program for monitoring and estimating marine mammal encounters targets about 10 percent of trips by vessels that use gear to which marine mammals are vulnerable. For gears that are given high priority by the Sea Sampling Observer Program this sampling frequency is often satisfactory for estimating bycatch in assessments. Attempts to estimate bycatch with sampling frequencies less than five percent are often unsatisfactory. For the purpose of monitoring a TAC, however, sampling frequencies greater than 10 percent are appropriate to improve accuracy.

## 5.2.17 TAC set-aside and administration to fund scallop research (Framework Adjustment 13)

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## **6.0 APPLICABLE LAW**

## 6.1 Magnuson-Stevens fisheyr Conservation and Management Act (MSFCMA) – Consistency with National Standards

#### 6.1.1 National Standard 1 – Optimum Yield

"Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the OY from each fishery for the U.S. fishing industry."

#### **Scallops**

The management measures in the proposed action are designed to optimize yield from the scallop resource within the groundfish closed areas, while preventing overfishing. The Council is using a 40 percent dredge efficiency estimate to determine the TACs at a level that is consistent with  $F_{max}$ , a proxy for  $F_{MSY}$  according to Amendment 7. The dredge efficiency estimates and models were reviewed by the Stock Assessment Review Committee and the Council's Scientific and Statistics Committee, both deeming this estimate to be the best available science. Both committees concluded that the dredge efficiency could vary according to bottom type, environmental conditions, and scallop abundance. Since the dredge efficiency estimates were calculated on the basis of samples taken during 1998 in Closed Area II, there is more uncertainty for this assumption in Nantucket Lightship Area and in Closed Area I. Comparison of the commercial dredge experiment and photographic survey data, however, shows the two sources of data agree with a dredge efficiency of at least 40 percent.

In fact, a primary objective of the proposed action is to move fishing effort from areas with small scallops to areas with large scallops. To the extent that this action reduces fishing mortality on small scallops, the delayed fishing effort will enhance rebuilding by allowing greater survival of the fast-growing, small scallops. The change shift in fishing effort could result, at least temporarily, in a different overall exploitation pattern for the Georges Bank stock. This would increase the biological reference point ( $F_{max}$ ), relieving overfishing for the Georges Bank scallop stock and increasing maximum sustainable yield. The analysis of the overfishing definition discusses this effect at length in Amendment 7 (NEFMC 1998).

At the same time, the proposed action is a step toward allowing the Scallop FMP to achieve optimum yield. Once scallops have grown to the sizes seen in many, but not all areas of the groundfish closed areas, the main effect of an area closure is to make that resource unavailable to the fishery. This eventually reduces yield as natural mortality removes a greater portion of the biomass increase caused by growth. As the resource within a closed area approaches its carry capacity, the productivity (as measured by surplus production) slows down, unless the individuals in the population (in this case scallops) emigrate from the closed area or contribute to reproduction in other areas. Although scallop biomass within the groundfish closed areas are probably a long way from the carrying capacity, the limited fishery proposed by this action lets the fishery harvest the large scallops, while letting the more productive (in terms of growth rate) scallops continue growing.

#### **Multispecies**

The target yellowtail flounder TAC and the provision to suspend the closed area scallop fishery if the catch exceeds this target is consistent with Amendment 7 to the Multispecies FMP and the existing rebuilding program. The 725 and 50 mt TAC is the difference in catch between the Amendment 7 target,  $F_{0.1}$ , and the expected catch by multispecies vessels during 1998. The proposed action will not, therefore, cause overfishing of Georges Bank or Southern New England yellowtail flounder (primary multispecies stocks) or jeopardize the rebuilding program established by Amendment 7.

Other regulated multispecies, especially winter and windowpane flounders, will also be impacted by the proposed closed area scallop fishery, but a rebuilding program has yet to be established for these stocks. SAW 28 (NEFSC 1999) concluded that Georges Bank winter flounder was overexploited and at a low level of biomass. Like yellowtail flounder, the closed area fishery could increase mortality on this stock, but might also benefit from reduced scallop fishing effort on other portions of Georges Bank. If the closed area fishery is suspended early from exceeding the yellowtail flounder TAC, the catch of Georges Bank winter flounder would likewise be kept to a minimum. There is a potential, however, that industry efforts to avoid catching yellowtail flounder might increase the catch of Georges Bank winter flounder, since the distribution of these species within Closed Area II differs. The status of windowpane flounder was assessed during SAW 30, reported in August 1999. Windowpane flounder biomass is near the target level and 1999 fishing mortality is also near the overfishing definition target.

#### Monkfish

Monkfish are widely distributed and bycatch on scallop vessels is high in many other areas. Projections (Section 6.2.6.1.10) however indicate that there could be a net increase in monkfish catches as a result of the closed area fishery. Since monkfish are overfished and will be in a rebuilding program (with the implementation of the Monkfish FMP), the increased catch could require complementary action under the Monkfish FMP. The basis for these projections of catch in the existing open scallop areas is weak and the effect of the expected effort shift into portions of the groundfish closed areas is very uncertain. Seasonal effects also could not be taken into account and could change the estimate.

#### 6.1.2 National Standard 2 – Scientific Information

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

All available information and detailed studies of the 1998 and 1999 experimental fishery were used to assess the impacts of various management alternatives and options. This information includes the latest data on day-at-sea use, vessel trip reports, landings, sea sampling observations, and an intensively-sampled experimental fishery that was conducted within Closed Area II during 1998 and with Nantucket Lightship Area and Closed Area I during 1999. In addition to these data, the biomass estimates from a photographic survey conducted by the Center for Marine Science and Technology was included in the analyses to estimate the TACs for Nantucket Lightship Area and Closed Area I. Projections of the effects of various options on biomass and fishing mortality were based on the 1998 research survey. At the time that this document was developed, the 1999 Albatross research survey had just been completed and the data from that survey were not yet available for analysis.

## 6.1.3 National Standard 3 - Management Units

"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."

While the Council chose a TAC that it expects will provide maximum sustainable yield from the scallop resource within the groundfish closed areas, it did this with the knowledge that the action could reduce fishing effort in other areas where large scallops are not as abundant. Due to the anticipated effort shifts from areas that are now open to scallops and, the overall effect will be to reduce fishing mortality or at least be conservation neutral on the stock as a whole. The action takes advantage of the opportunity afforded by the rebuilt resource in the groundfish closed areas to manage the entire stock.

#### 6.1.4 National Standard 4 - Allocations

"Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be:

- Fair and equitable to all such fishermen
- Reasonably calculated to promote conservation
- Carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges."

All vessels with a limited access scallop permit are eligible to fish in the closed area fishery, regardless of where they customarily fish or land their scallops. Due to proximity to the fishing grounds, there is some advantage to vessels in New England from lower costs to travel to and from port. All vessels, however, are limited to fishing in buffer zones or in the accessible portions of the groundfish closed areas.

Many distant vessels are likely to take back-to-back closed area trips to reduce costs. The first trip, in this case, will depart from a Mid-Atlantic port (where supplies would be purchased locally) and return to a New England port to unload after fishing. The second trip would depart from New England and return to a Mid-Atlantic port to unload scallops. During the last dominant year class of scallops on Georges Bank, this was a common strategy for vessels from Mid-Atlantic states.

## 6.1.5 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."

This framework adjustment, allowing access to the groundfish closed areas by scallop vessels, proposes no sector allocations or limited access beyond the ones established by Amendment 4 to the Atlantic Sea Scallop FMP. All vessels with a limited access scallop permit are eligible to participate in the closed area fishery and all vessels except ones with occasional scallop permits will receive the same

opportunity to fish. Occasional vessels will only be able to take one closed area trip, because the automatic accumulation of days would use the vessel's entire annual allocation of days-at-sea.

While vessels that take closed area trips will probably accumulate more days than the actual trip duration, the proposed action avoids the economic waste often associated with a derby fishery. A derby fishery is one that the regulations encourage vessels to harvest the maximum amount of fish or shellfish before access is denied.

The yellowtail flounder TAC and the threat of an early suspension of the closed area fishery could create an incentive to take the initial allocations of closed area trips as early in the season as possible, however. Economic waste, in this situation, could arise because vessels cannot take trips during the most advantageous period when prices are high. For example, if the industry believes that it cannot complete the scallop fishery before the bycatch exceeds the yellowtail flounder TAC, all the vessels that plan to take a closed area trip might take their trips as quickly as possible. This could result in temporary price declines that reduce producer surplus, although the benefits could accrue to different sectors of the economy (as consumer surplus, for example).

## 6.1.6 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 allows the Regional Administrator to either suspend the fishery because yellowtail flounder bycatch is to high (Section 5.1.5) or to make a mid-season adjustment to allocate more trips (Section 5.1.6.1) and change the scallop possession limit (Section 5.1.9.1). These adjustments address variations and contingencies that might occur during the progression of the proposed closed area fishery. Improved monitoring and reporting mechanisms are proposed that will allow timely in-season adjustment of management measures to respond to changing or unexpected conditions.

The estimated impacts and effects of the various management alternatives and options were based on the 1998 experimental fishery, conducted in Closed Area II and on the 1999 experimental fisheries, conducted in the Nantucket Lightship Area and in Closed Area I. Many factors including seasonality and inter-annual variations could affect the performance of a commercial fishery vs. the expectations derived from last year's experimental fishery. One of the more important assumptions that will be violated by the proposed action is the distribution of fishing effort within the open portion of the groundfish closed areas. Many vessels will target the highest concentrations of scallops and hopefully avoid areas with high bycatch of yellowtail flounder and other species. Other vessels may work in areas that scallops are less abundant to avoid other scallop vessels or gear conflict. It was impossible to predict to what extent vessels will fish in relation to scallop density and how much the average conditions (predicted by the model) would differ from actual results. Data is being collected during 1999 in Closed Area II to predict fishing behavior with regard to scallop abundance, scallop meat weight, and bycatch levels. At the time that this analysis was completed, this data was still being collected and not available for analysis. The proposed action, therefore, allows for responding to these uncertainties and changing conditions.

### 6.1.7 National Standard 7 - Costs and Benefits

"Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication."

Monitoring and reporting procedures use existing systems and technology to minimize the administrative burden on the government and on individuals. The minimum amount of reporting is required to ensure the fishery does not exceed the management targets and to enhance compliance. No duplicative reporting is required unless it is absolutely required to provide real-time monitoring of the fishery. Real-time monitoring will allow rapid response to contingencies that arise during the progress of the fishery.

#### 6.1.8 National Standard 8 – Communities

"Conservation and management measures shall, consistent with the conservation requirements of the Magnuson-Stevens 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:

- Provide for the sustained participation of such communities; and
- To the extent practicable, minimize adverse economic impacts on such communities."

Producer surplus will increase by \$19 million for the proposed action compared to status quo (i.e. not allowing a closed area scallop fishery). These benefits will accrue to the vessel owners, the crew, and the communities that depend on them and their business. This action will enhance profitability of the scallop fleet, creating jobs (although there are existing limits on direct employment), and continuing to sustain communities with scallop vessels.

On the other hand, there may be some collateral impacts on communities that rely on groundfish landings, especially species that inhabit Georges Bank. The proposed action limits these negative impacts on communities that are depending on groundfish landings by capping the yellowtail flounder catch (Section 5.1.4), requiring scallop vessels to use a more-selective large mesh twine top (Section 5.1.8.2), and establishing incentives for the industry to adopt fishing methods that will reduce groundfish bycatch. A discussion of impacts from the perspective of both the scallop and groundfish fisheries is given in Section 6.2.6.1.8.

## 6.1.9 National Standard 9 – Bycatch

"Conservation and management measures shall, to the extent practicable:

- Minimize bycatch; and
- To the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

The proposed action raises the possession limit for regulated multispecies, without increasing the incentive to target these overfished stocks after the vessel had caught its scallop possession limit. If the fleet takes all of the allocated trips, the action could significantly reduce discards, since it is expected that nearly all trips will catch more than the multispecies possession limit. Monkfish possession limits, regulated by the Monkfish FMP, appear to be sufficient to prevent discarding in most cases.

The management approach adopted by the Council will also minimize scallop discarding, compared with other forms of potential management. Compared to Alternative 2 that the Council considered for Framework Adjustment 11, the fixed day-at-sea tradeoff allowed a greater opportunity for fishermen to alter fishing behavior and avoid bycatch. Judging from the observer program data from Closed Area II during 1999, this appears to have worked very well. As opposed to other management alternatives, the proposed action allows vessels to slow down and carefully process the species that come on deck. Since the vessels will be able to catch the scallop possession limit in less than 10 days-at-sea, some vessels may take different approaches to avoid or reduce bycatch even though it might take more time to actually fish. On closed area trips, vessels will automatically accumulate a fixed number days-at-sea regardless of how short the trip is, eliminating the incentive to catch scallops as quickly as possible no matter how much bycatch the vessel encounters.

Although the proposed action has a scallop possession limit, there is no reason that vessels need to deck load or discard scallops. Highgrading is not expected to be a problem since the price differential between large and small scallops is not great enough to be an incentive to highgrade. Crews that shuck scallops often discard small scallops that are uneconomic to process in favor of larger scallops, but this is usually done within a short time period and scallop survival is thought to be high. Due to the low possession limits for other species, it is also unlikely that the vessels would continue scallop fishing after having caught and processed the scallop possession limit.

## 6.1.10 National Standard 10 - Safety of Life at Sea

"Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea."

The proposed action spreads the expected fishing activity out in time and space, so as to avoid some of the problems that might compromise safety. The maximum amount of area is proposed to be open to scallop fishing within the Nantucket Lightship Area, Closed Area I, and Closed Area II, without increasing the potential impacts on habitat to unacceptable levels. These area options could reduce the potential for crowding and gear conflict, giving the vessel operator more flexibility to fish in the safest areas. The proposed scallop possession limits (Table 15) are commonly caught on many scallop vessels (albeit on longer trips) and can be safely stored onboard the vessel. One last factor that improves safety is that the closed area trips are expected to be shorter than usual. Compared to taking longer trips to catch the same amount of scallops in the existing open scallop areas, the proposed action places the vessel atsea for shorter periods and reduces the risk of facing inclement weather and other at-sea hazards.

Other alternatives propose to allow a fishery in more restrictive areas, possibly causing crowding and other problems. Other ways that have been proposed to manage the fishery also could set up incentives to fish or travel as quickly as possible, under any weather condition, to reduce the amount of days the vessel accumulates on a closed area trip. Lastly, other forms of counting days-at-sea might cause vessels to deck load scallops to potentially unsafe levels.

## 6.2 National Environmental Policy Act (NEPA) – Environmental Assessment

The proposed action is not significant for the purposes of preparing an Environmental Impact Statement (EIS). The most recent EIS documents for the Multispecies FMP and the Atlantic Sea Scallop FMP adequately describe the fishery, the resource, the biological, and the human environment. The proposed action in this Framework Adjustment does not change the goals, objectives, or rebuilding plans

for either multispecies or sea scallops and the scope of this framework adjustment only includes the 1999 fishing year for sea scallops. This Environmental Assessment (EA) estimates and describes the potential impacts of the proposed action in the context of the existing management measures for multispecies and sea scallops.

## 6.2.1 Purpose and Need for the Proposed Action

The purpose and need for the proposed Framework Adjustment is described in Section 3.0.

#### 6.2.2 Description of the Proposed and Alternative Actions

The description and rationale for the proposed measures is described in Section 3.0.

## 6.2.3 Description of the Physical Environment

The physical environment is described in the EIS for Amendment 9 to the Northeast Multispecies FMP and Amendment 7 to the Atlantic Sea Scallop FMP.

## 6.2.4 Description of the Biological Environment

The biological environment is described in the EIS for Amendment 9 to the Northeast Multispecies FMP and Amendment 7 to the Atlantic Sea Scallop FMP.

## 6.2.5 Description of the Human Environment

The human environment is described in the EIS for Amendment 9 to the Northeast Multispecies FMP and Amendment 7 to the Atlantic Sea Scallop FMP.

## 6.2.6 Impacts of the Proposed Action

If the groundfish closed areas are re-opened to scallop fishing in a way that effectively shifts the majority of actual (i.e., unused DAS) fishing effort away from the open areas, it could be an effective first step at rebuilding the scallop resource in the Great Sought Channel, the New York Bight and the Delmarva regions when it is coupled with the existing and planned effort reduction in Amendment 7. Closing areas on Georges Bank and the Mid-Atlantic to scalloping has concentrated the fishing effort into smaller areas, depleting the available resources more than if the closed areas had been left open. Reopening the groundfish closed areas to scallop fishing would be a first step to reversing this trend and allowing the day-at-sea reduction schedule to have its full effect.

Selective closing of areas to scallop fishing is not without its benefits, however, especially if areas are closed at times when smaller scallops predominate. Closed areas could effectively impose a delayed exploitation pattern, taking advantage of the rapid growth rate of younger scallops, and significantly improving yield. This strategy will be the core issue for the next plan amendment.

Although the 1998 experimental scallop fishery in Closed Area II and the 1999 experimental fisheries in the Nantucket Lightship Area and Closed Area I provide highly-detailed information about the scallop resource and related bycatch, the commercial vessel tows were generally limited to 10 minutes. As a result, the experimental fishery data provided little direct evidence about how a commercial scallop

fishery will operate in the closed areas in 1999. The catches were not restrained by shucking capacity because the tow duration and gear handling differed so markedly from what is likely to occur under normal commercial operations. There were also no data to indicate how various management restrictions would influence how, where, and how long the vessels would fish in the re-opened closed areas.

Enough information was however available to make some statistical inferences and develop a fishery model, especially when combined with the annual research survey data and ancilary information from the industry about how long it takes to handle the gear, maximum tow duration, and how the vessels would respond to the different resource conditions within the closed areas. Another important piece of information came from Kirkley et. al. (1991) who measured the shucking capacity for vessels using seven to nine-man crews. The shucking capacity (in pounds) varied as a function of scallop size (i.e. meat count).

The information from these various sources were combined into a model that could estimate total fishing effort, scallop catch, and bycatch amounts for a variety of potential management options under consideration in Framework Adjustment 11/29. The results give an indication of the net change in fishing effort (measured in fishing time and days-at-sea) and whether the estimated catches will exceed the TACs for scallops and various bycatch species. The methods that describe this model are given in Section 8.1.1.4 in Framework Adjustment 11 (NEFMC 1999a).

## 6.2.6.1 Biological Impacts of closed area access options

#### 6.2.6.1.1 General conclusions

Access to closed areas has the potential to increase total yield about 17 percent, while preventing increases in scallop fishing mortality. All the options presented here are conservation-neutral and decrease total dredge bottom time, inside and outside the closed areas. Since the proposed access allows the scallop fleet to harvest large scallops in the closed areas, it would reduce mortality on smaller scallops in the open areas and contribute to rebuilding biomass by increasing survival of rapidly-growing small scallops.

The alternatives for allowing scallop fishing within portions of the groundfish closed areas is a continuation of the highly successful program in Closed Area II and a possible expansion of the program to portions of Nantucket Lightship Area and Closed Area I. Continuing the management policy adopted under Framework Adjustment 11, the TAC is determined as the amount of harvest that is consistent with a maximum sustainable yield identified for the entire resource, applied to the projected standing biomass in each closed area. The former policy also required a day-at-sea tradeoff that is calculated to produce a conservation-neutral policy, with respect to scallop fishing mortality.

Exploitable scallop biomass in the three closed areas was estimated to be 28.5, 36.5, and 33.4 million lbs. for Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively, assuming a 40 percent dredge efficiency. Twenty percent of this biomass gives a combined TAC of 19.1 million lbs., after deducting a one-percent set-aside to fund scallop research (**Table 20**).

The amount of allowable trips in each area, assuming that all trips land the scallop trip limit, ranges from zero to four trips per vessel (Table 21). Summed across all areas, the allowable allocation of trips to fish in the closed areas ranges from three trips with an 18,000 lb. scallop trip limit to eight trips with an 8,000 lb. trip limit.

These trip limits and allocations were analyzed over a range of day-at-sea tradeoffs to determine the minimum day-at-sea choice that produced a conservation-neutral result. These day-at-sea tradeoffs ranged from 7 - 10 days with an 8,000 lb. trip limit to 18 - 21 days with an 18,000 lb. trip limit (Table 31), approximately one day-at-sea for each 1,000 lbs. landed.

The proposed alternatives for access to the groundfish closed areas on Georges Bank were chosen by time and area to minimize bycatch, minimize habitat impacts, and to avoid gear conflict. Although a quantitative analysis of impacts for these factors is not possible with current information, there is sufficient information in Sections 6.2.6.1.8 and in Appendix II to subjectively assess these impacts.

The effects on habitat and bycatch can be assessed, however, in terms of fishing time. The proposed alternatives and trip limit options are expected to reduce dredge bottom time by 17 to 28 percent (Table 31). The lowest trip limit option appears to reduce dredge bottom time the most, because more days-at-sea are consumed by steaming to and from port, rather than by fishing.

The yellowtail flounder TACs, recommended in this document are based on the revised TAC recommendations by the Multispecies Monitoring Committee and on the historic proportion of landings of yellowtail flounder by vessels using dredges. Based on this analysis, the recommended TAC for yellowtail flounder by vessels fishing for scallops in the groundfish closed areas are 725 mt for Closed Area I and Closed Area II, combined and 50 mt for Nantucket Lightship Area. The former TAC is for the Georges Bank yellowtail flounder stock.

Yellowtail flounder catches have been estimated from the bycatch rates observed in the Closed Area II fishery and in the experimental fisheries in Nantucket Lightship Area and in Closed Area I. The net effects from the effort shifts cannot be quantified, however, because the catch rates and distribution of fishing effort with regard to the distribution of yellowtail flounder on Georges Bank and in Southern New England is unknown.

Based on these data and the Framework Adjustment 11 model for estimating the effort shifts and conservation-neutral day-at-sea tradeoffs, indicate that the lowest yellowtail flounder catches occur for the 15,000 lb. scallop trip limit option, followed by the 8,000 lb. option. These differences are relatively small however, ranging from 602 to 707 mt. The predicted bycatch for other species show similar patterns over the range of options in this framework adjustment.

#### 6.2.6.1.2 Sources of data

Three types of surveys are available to measure current biomass and estimate the total 2000 biomass in the three groundfish closed areas: the annual research survey, a new photographic survey conducted in portions of Closed Area I and the Nantucket Lightship Area, and a systematic experimental commercial vessels surveys conducted throughout Closed Area I and the Nantucket Lightship Area during July and August 1999. Statistics for the estimated biomass and adjustments to account for biomass throughout the three areas is given in Table 23, and described in the following sections. All estimates from dredge surveys assumed a 40 percent dredge efficiency, consistent with the best scientific information. The gear efficiency for the photographic survey was assumed to be 100% for scallops that were large enough to be visible. Researchers at CMAST believed that scallops smaller than commercial sizes were observable.

<sup>&</sup>lt;sup>27</sup> A small proportion of catches within Closed Area I are assigned to the Cape Cod and Southern New England yellowtail flounder stocks, based on previous tagging studies.

For the Nantucket Lightship Area, each data source gave comparable biomass estimates and the mean of the three was accepted to set the scallop TAC. The Albatros (annual research) survey in Closed Area I was sensitive to four anomalously large tows and gave a biomass estimate that was much higher than the other sources of data. This data was therefore omitted when estimating the scallop TAC. The size distribution for scallops in Closed Area I was only available from the research survey, so it was used to estimate the change in biomass during 1999 with no fishing mortality. The experimental fishery during 1998 in Closed Area II was comparable to the annual research survey data. Assuming that 3,678 mt of scallops would be removed from the portions south of 41°30', the estimated fishing mortality was 0.6 and the total biomass throughout Closed Area II at the end of 1999 will be 26.2 million lbs.

## 6.2.6.1.3 CMAST photographic survey

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6.2.6.1.4 Commercial experimental fisheries and extrapolation of the photographic survey data for unsurveyed areas within the closed areas

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#### 6.2.6.1.5 Annual Albatross survey

At the time of this analysis, the 1999 research survey data was unavailable. Mechanical difficulties postponed the annual survey and part of it was done by a comparable commercial vessel at a later date. The vessels had just returned from the survey and it takes about six weeks before the data can be processed and analyzed. Added to this delay will be problems associated with comparing (calibrating) the catch rates between the NMFS Albatross and the F/V Tradition, a vessel under contract to complete the annual survey. In lieu of this new information, the PDT projected biomass in 1999 and 2000 from the 1998 survey data, using methods described in Section 6.2.6.2 in Framework Adjustment 12 (NEFMC 1999c).

Reasonable biomass estimates from the 1998 survey were calculated in Nantucket Lightship Area and Closed Area II, but the biomass estimate for Closed Area I is very sensitive to four very large tows in one part of Closed Area I. The stratified mean biomass estimate in Closed Area I was very high (111.9 million lbs.) compared to the photographic survey and the experimental fishery (36.7 and 25.8 million lbs., respectively). Since the Altbatros estimate is very sensitive to these anomalous tows, the PDT did not use this survey to estimate biomass in Closed Area I.

The projected biomass for the beginning of the 1999 calendar year<sup>28</sup> is 26.48 million lbs. for the Nantucket Lightship Area, 111.90 million lbs. for Closed Area I, and 33.25 million lbs. for Closed Area II. These same 10-year projections indicate a biomass change of 45.7, 47.3, and 26.8 percent for these

<sup>&</sup>lt;sup>28</sup> This represents a six-month 'bridge' projection from July-August 1998 (the last avaliable survey) to December 31, 1999, applying an estimated fishing mortality open areas of Georges Bank and the Mid-Atlantic and an estimated 3,678 mt catch from Closed Area II.

areas during 1999, respectively. Most of the increase during 1999 was estimated to occur during the first half of 1999, as the large year class first observable in the 1998 survey grew quickly and entered the exploitable size range.

Since this biomass growth mainly occurred prior to the experimental survey, the photographic survey, and the proposed fishing seasons for the closed areas, an approximation of mid-year change in biomass was made by averaging the January 1 biomass for 1999/2000 and for 2000/2001, respectively. Thus the 1999/2000 biomass average approximates the biomass that was present at the time of the 1999 surveys and the 2000/2001 biomass average approximates the biomass that would be present<sup>29</sup> at the time of the proposed closed area fisheries.

On this basis, the projected change in mid-year biomass from 1999 to 2000 is 16.3, 17.0, and 27.3 percent for Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively. This projected change in biomass was used to forecast the biomass in the 2000 fishing year based on all three sources of data.

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<sup>&</sup>lt;sup>29</sup> This calculation is dependent on the fishing mortality that occurs prior to the fishery. For this purpose, no fishing mortality prior to mid-year was assumed in the closed areas. To calculate the day-at-sea tradeoffs, the change in biomass during the first half of 2000 was assumed based on a projection assuming an allocation of 120 full-time days-at-sea.

**Table 16.** Biomass estimates for the three closed areas from CMAST photographic survey, experimental fishery, and research survey data. The biomass values from each survey have been extrapolated to the entire closed area and adjusted by the expected change in exploitable biomass between 1999 (when the surveys were conducted) and 2000 when access is proposed by this framework adjustment.

	Nantucket				
	Lightship Area	Closed Area I	Closed Area II		
CMAST photographic survey					
Number of samples	204	454	0		
Mean scallops/m	0.508	0.330	NA		
Standard error	0.084	0.030			
Mean biomass (million lbs.)	13.50	22.40			
Upper 95% confidence limit	17.90	26.40			
Lower 95% confidence limit	9.30	18.30			
Adjusted to total area					
Mean biomass (million lbs.)	15.83	36.67	NC		
Upper 95% confidence limit	20.99	43.22			
Lower 95% confidence limit	10.91	29.96			
1999 Experimental Fishery					
Number of samples	148	93	0		
Stratified mean number/tow	7.59	8.09	NA		
Standard deviation	1.98	1.74			
Mean biomass (million lbs.)	39.53	25.81			
Upper 95% confidence limit	59.80	36.70			
Lower 95% confidence limit	19.27	14.93			
Median biomass (million lbs.)	13.47	NC	NC		
Stratified mean in photographic survey area	33.71	15.77			
1998 Annual Albatros Survey					
Number of samples	29	19	39		
Mean number/tow (full recruits)	120.4	1124.3	120.9		
Mean weight/tow (kg, full recruits)	3.92	24.47	3.04		
Swept-area biomass (million lbs.)	18.18	75.96	26.22		
Projected 1999 swept-area biomass (million lbs.)	26.48	111.90	33.25		
Projected percent change in biomass in 1999 - 2000 at survey	16.3%	17.0%	27.3%		

#### 6.2.6.1.6 TAC estimates for the 2000 fishing year

Scallop TACs are used to prevent the total catch from exceeding thresholds that are consistent with maximum sustainable yield and fishing mortality goals for scallop fishing in formerly closed areas. This threshold for the entire resource is F=0.24, or 19.4 percent of the average number of scallops in the population during the fishing year. Although an approximation due to in-season growth, this fraction can also be applied to mid-year biomass to estimate TACs that are consistent with this policy.

Given the availability of data and the potential for outliers in each data set that would produce spurious results, the PDT identified the following sources of data and biomass estimates to recommend TACs for accessing closed areas during 2000:

♦ Nantucket Lightship Area: CMAST photographic survey extrapolated to the entire area and the 1999 experimental fishery swept area estimate assuming a 40 dredge efficiency. Both estimates were projected to 2000, by applying the change in mid-year biomass from the biological projections

assuming no catch in 1999. Also included in the biomass estimate was the biological projection results from 1998 survey data, assuming no catch in 1999.

- ♦ Closed Area I: CMAST photographic survey extrapolated to the entire area and the 1999 experimental fishery swept area estimate assuming a 40 dredge efficiency. Both estimates were projected to 2000, by applying the change in mid-year biomass from the biological projections assuming no catch in 1999.
- ♦ Closed Area II: Biological projections from 1998 survey data, assuming a 3,678 mt scallop catch in 1999.

Mid-year biomass was approximated from the calendar year projections (Section 6.2.6.2 in Framework Adjustment 12; NEFMC 1999c) by averaging the biomass at the beginning of 1999 and 2000, and the beginning of 2000 and 2001. Although this method is not technically correct, it provided a reasonable approximation of the change of biomass from the time of the 1999 surveys to the time of the proposed access in 2000, given a TAC that would be consistent with the events that are expected between the surveys and the proposed fisheries.

The change in the approximate mid-year biomass is 16.3 percent for Nantucket Lightship Area (Table 23), 17.0 percent for Closed Area I, and 27.3 percent of Closed Area II. Except for Closed Area II, the change in mid-year biomass is less than the change in biomass between the beginning of 1999 and the beginning of 2000. The reason for this is that the strong 1998 year class<sup>30</sup> is growing quickly during 1999 and entering the exploitable size range. As a result, the biological projection estimates a considerable increase in biomass between the end of 1998 and the end of 1999 (Tables 12 to 18 in Framework Adjustment 12; NEFMC 1999c).

Most of the increase in exploitable biomass occurs in early 1999, however. Using the calendar year increase to adjust surveys conducted mid-year would in effect double count this considerable growth. In the latter half of 1999 and early 2000, the growth of this year class is expected to slow and fewer scallops (of younger age) will be recruiting into the exploitable size range.

The average 1999 biomass estimates from the surveys identified above are: 24.5, 31.2, and 26.2 millions lbs. in Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively (Table 24). Applying the projected change in mid-year biomass between 1999 and 2000 gives a 2000 fishing year estimate of 28.5, 36.5, 33.4 million lbs. respectively.

Applying an exploitation rate consistent with F = 0.24, gives TACs of 5.5, 7.1, and 6.7 million lbs. for the proposed scallop access into Nantucket Lightship Area, Closed Area I, and Closed Area II, respectively (Table 24). One-percent of these TACs, totaling 193,000 lbs. is intended to fund scallop research (Section 5.1.3.2.1), leaving 19.1 million pounds to determine trip allocations and potential trip limits for accessing each closed area.

<sup>&</sup>lt;sup>30</sup> For convenience, this is referred to as the 1998 year-class because 1998 was the year that these scallops were first observable. In reality, these scallops are already two to three years old at that time.

**Table 17.** Adjustment of 1999 biomass estimates and calculation of 2000 scallop TACs for access to Georges Bank closed areas.

	Nantucket			
	Lightship Area	Closed Area I	Closed Area II	All
Mean biomass estimate				
1999 average (million lbs.)	24.51	31.24	26.22	81.98
2000 projected swept area biomass (million lbs.)	28.52	36.54	33.37	98.43
TAC (million lbs.) at F=0.24	5.53	7.09	6.67	19.29
TAC (mt) at F=0.24	2,509	3,215	3,025	8,750
One percent research set aside (lbs.)	55,321	70,884	66,690	192,895
Fishery TAC (million lbs.)	5.48	7.02	6.60	19.10

#### 6.2.6.1.7 Trip allocations and trip limits

To estimate the number of trips that can be allocated, the fishery TAC (Table 24) is simply divided by the trip limit that would apply if it is assumed that any trip into the closed area will catch the allowable trip limit. For example, the 5.48 million pound TAC for the Nantucket Lightship Area can allow for 548 trips with a 10,000 pound trip limit. Similarly, the total number of 15,000 pound trips to catch 6.6 million lbs. in Closed Area II is 440 trips.

Determination of how many trips to allocate to each vessel is a little more complicated, however. The first step is to determine how many vessels are likely to participate. Consistent with the successful policy for Framework Adjustment 11, the PDT assumed that all vessel with active permits would fish in the Nantucket Lightship Area and in Closed Area I. There are 328 limited access scallop vessels with active permits, including 247 that used one or more scallop days-at-sea in 1998 (Table 8 in Framework Adjustment 12; NEFMC 1999c), 14 vessels that are known to have fished in Closed Area II in 1999 but not 1998, and the remaining 67 vessels with a scallop limited access permit. This does not include the 37 Confirmation of Permit Histories (Table 8 in Framework Adjustment 12; NEFMC 1999c) that could be assigned or transferred to a suitable scallop fishing vessel to take advantage of the new opportunities and the higher (predicted) catch rates.

The PDT thought that although fewer vessels actually fished in Closed Area II during 1999, many more vessels could choose to fish in Nantucket Lightship Area and Closed Area I, due to closer proximity to shore. Simultaneous openings and greater opportunities to fish may also attract vessels that would not have otherwise fished as well. Although this could be viewed as a conservative estimate, reducing the number of trips allocated at the beginning of the season, the PDT believes that this estimate is reasonable, especially given the potential for an in-season adjustment of trips based on actual participation.

In Closed Area II, on the other hand, 178 limited access scallop vessels have so far taken at least on Closed Area II trip. The number of unique participants has continued to rise throughout October 1999, during the preparation of this document. The PDT agreed that the actual number of participants in the Closed Area II fishery was the best assumption to use. Two reasons for assuming participation for fewer vessels in Closed Area II are 1) not all limited access scallop vessels are capable of taking trips to Closed Area II, either due to distance and economics or safety, and 2) simultaneous openings of Nantucket Lightship Area and Closed Area I could divert effort from the more offshore area reducing activity compared to conditions in 1999.

For an initial estimate of the number of trips that vessels in the three categories could take, it was assumed that the day-at-sea allocations would remain at 1999 levels (i.e. 120 full-time days) and that the day-at-sea tradeoff is 10 days for each trip into a closed area. Since an occasional vessel would only have

10 days-at-sea to fish for scallops, the maximum number of trips it could take is therefore one. Similarly a part-time vessel with 48 days-at-sea could at most take four trips to the closed areas.

Given the number of vessels with each type of limited access permit and their assumptions about fishing in each closed area, the number of trips to allocate is either one or two in Nantucket Lightship Area and Closed Area I (Table 25). Lower trip limits imply that more trips could be allocated, since each trip would land a smaller fraction of the TAC. Due to the assumption about participation by 178 vessels in Closed Area II, rather than all active permits (328), the potential allocations for Closed Area II range from two to four trips.

Together, three trips could be allocated (Table 25) to limited access vessels to fish in the three closed areas with an 18,000 lbs. trip limit (occasional vessels taking only one trip), and up to eight trips with an 8,000 lbs. trip limit (occasional vessels taking one trip, part-time vessels taking four trips). If a vessel takes all the trips it might be allocated to fish in the closed areas and there is a ten day-at-sea tradeoff, these trips could use up 25 to 67 percent of the total days allocated, assuming 1999 allocations continue.

These potential trip allocations were applied in Section 6.2.6.1.10 in the Framework 11 depletion model to estimate the effects of the various options and to estimate the minimum day-at-sea tradeoff needed to be conservation-neutral. Since which areas will be approved for access by scallop vessels in 2000 is currently unknown and the actual day-at-sea tradeoff is unspecified at this point, some additional fine-tuning is possible through an iterative process between this calculation and the depletion model. It might cause a small increase the number of trips that could be allocated with more a tradeoff of more than 10 days.

**Table 18.** Assumed vessel participation and maximum trip allocations for trip limits in common for all areas.

	Nantucket					
	Lightship Area	Closed Area I	Closed Area II	All		
Expected vessel participation						
Full-time	236	236	174			
Part-time	43	43	4			
Occassional	49	49	0			
Total estimated participation	328	328	178			
Trips limit (lbs. meat weight)	Total number of t	trips to allocate				
8000	685	877	825			
10000	548	702	660			
12000	456	585	550			
15000	365	468	440			
18000	304	390	367			
<b>T</b>	N 1 661					
Trips limit (lbs. meat weight)	Number of trips per vessel to allocate					
8000	2	2	4	8		
10000	1	2	3	6		
12000	1	1	3	5		
15000	1	1	2	4		
18000	0	1	2	3		

#### 6.2.6.1.8 Finfish bycatch

Two new sources of data exist to estimate the potential for bycatch: observer data for Closed Area II and the experimental fishery data for Nantucket Lightship Area and Closed Area I. At the present time, however, data is still coming in from the Closed Area II fishery and there hasn't been sufficient time to rigorously examine the experimental fishery data for all bycatch species. Due to the high vulnerability of the gear and importance to the Multispecies FMP and fleet, the PDT focused on characterizing the distribution and estimating the mean bycatch rates for yellowtail flounder. Where possible, the number of fish by species as bycatch was incorporated in the closed area model (Secton 6.2.6.1.10) to estimate the probable impacts.

#### Closed Area II

In Closed Area II, yellowtail flounder bycatch was carefully monitored by placing observers on 25 percent of all trips, consistent with the objectives of Framework Adjustment 11. Although the catch of all species was observed, only yellowtail flounder and scallop catch was analyzed in detail. At the time of analysis, only data through October 4, 1999 were available. Since that time, the scallop catches per day-at-sea appear to continue declining, but the yellowtail flounder bycatch appears to be increasing (Figure 3) as vessels may be fishing in areas of high scallop and yellowtail flounder abundance, taking less care to avoid yellowtail flounder at the fishery nears the yellowtail flounder TAC.

As anticipated by the Framework Adjustment 11 analysis, the scallop landings per day (24-hours) has declined since the initial access to Closed Area II. This effect is the combined result of a depletion effect (predicted by Framework 11), changes in the geographical distribution of effort during the season, changes in crew size and practices by vessels fishing in Closed Area II, and changes in the fleet characteristics for vessels fishing in Closed Area II. Dr. William DuPaul and others are currently observing the fleet with TAC set-aside funding to identify the effect and interaction of these factors in determining catch rates. This information and analysis will be very useful to fine-tune future closed area access models.

The weekly median scallop landings and yellowtail flounder catch is shown in the table below. This data with related statistics is also given in Appendix II. As of October 20, 1999, scallop trips in Closed Area II were calculated by NMFS to land 686,000 lbs. of yellowtail flounder and 4.7 million lbs. of scallop meat.

This ratio (0.147) was used to adjust the weight per 10-minute tow data from the 1998 experimental fishery in Closed Area II. For various reasons, the ratio of yellowtail flounder to scallops was much less than estimated by the Framework Adjustment 11 analysis (0.62, NEFMC 1999a – Table 106). Possible factors in the lower bycatch rate are larger twine tops in the Closed Area II fishery<sup>31</sup>, non-uniform fishing practices that differed from the experimental fishery<sup>32</sup>, and longer tow times than affected dredge fullness and possibly bycatch rates<sup>33</sup>.

<sup>&</sup>lt;sup>31</sup> Framework Adjustment 11 requires vessels to use 10-inch twine tops, while the 1998 experimental fishery used 6-inch twine tops.

<sup>&</sup>lt;sup>32</sup> The experimental fishery employed a uniform distribution of tow locations to estimate biomass, while the commercial fishery focused on areas of abundant, large scallops in the SW and NE quadrats in the open portion of Closed Area II.

<sup>&</sup>lt;sup>33</sup> The experimental fishery required standard tows of 10-minutes, while fishermen report an average tow duration of 60 minutes, but this may have changed during the Closed Area II fishery.

**Table 19.** Closed Area II catch rates for scallops and yellowtail flounder for observed trips.

	Northernof	Reported scallop	Number	Observed scallop	Yellowtail flounder		Davis da sadah
	Number of	landings (lbs. meat	Number of	landings (lbs. meat	catch (lbs. whole per		Days to catch
Week	reported trips	weight per 24 hours)	observed trips	weight per 24 hours)	24 hours)	Rato	scallop trip limit
23	15	2050	7	1413	255	0.18	4.88
24	134	2736	61	2000	194	0.10	3.65
25	183	2555	61	1889	196	0.10	3.91
26	150	2656	30	1599	228	0.14	3.77
27	203	2400	26	1858	103	0.06	4.17
28	203	2295	24	1531	134	0.09	4.36
29	173	2050	56	1639	146	0.09	4.88
30	147	1980	48	1169	65	0.06	5.05
31	135	1835	39	1243	52	0.04	5.45
32	97	2068	31	1500	171	0.11	4.84
33	82	1893	40	1452	73	0.05	5.28
34	68	2000	38	1215	35	0.03	5.00
35	61	1800	32	1288	60	0.05	5.56
36	75	1984	37	1356	122	0.09	5.04
37	34	1767	17	786	56	0.07	5.66
38	115	1500	55	1000	99	0.10	6.67
39	86	1400	23	975	201	0.21	7.14

#### Nantucket Lightship Area and Closed Area I

The experimental fishery conducted in July and August 1999 gave new information about potential scallop and finfish catch rates in Nantucket Lightship Area and Closed Area I. This data is preliminary however and not all data are yet available for analysis. Below is a summary of the estimates from the experimental fishery program. Although this information is crucial to estimating the effects of the proposed closed area access options, it is also instructive to visually examine the catch distributions in Appendix II.

The data indicate that scallops are abundant in strata 1 and 8 in the Nantucket Lightship Area (Table 19; see Appendix II for a map of strata) and strata 2, 3, 5, and 6 in Closed Area I (Table 21). The data also indicate that the predominant catch is for monkfish, followed by yellowtail flounder and barndoor skate (Table 27). No cod or haddock were observed in Nantucket Lightship Area and were a very minor component of the catch in Closed Area I.

Although barndoor skate catches were high in the experimental fishery, nearly all of the bycatch occurred outside the areas (Appendix II) that are proposed for scallop access. Large catches of barndoor skate were in the south-central portion of Nantucket Lightship Area (Appendix II), outside of the northeast corner that is proposed for access. A relatively high catch in the Closed Area I experimental fishery was actually outside of the boundary of Closed Area I. If this area, where barndoor skates were observed, is productive scallop habitat, the access program could actually benefit barndoor skate.

**Table 20.** Mean number of animals captured per 10-minute tow in an experimental fishery conducted during July and August 1999.

	Nantucket Lightship Area	Closed Area I
Number of tows	188	132
Scallops (pounds meat)	51.72	53.36
Yellowtail flounder	1.01	3.76
Cod	0.00	0.17
Haddock	0.00	0.03
Monkfish	5.00	5.95
Barndoor skate	0.61	0.46

During the analysis of impacts for this framework adjustment, it was possible to obtain only the size frequency distribution for the yellowtail flounder catch in Nantucket Lightship Area. Weights at size were applied to these data to estimate the catch per 10-minute tow in weight. These data were further post-stratified with the same stratification method to estimate the stratified mean weight per tow for the scallop catch (Table 19). The mean weight per tow in Nantucket Lightship Area was 0.47 kg and the highest catches occurred in strata 8 and 1, respectively (Table 28). For purposes of estimating the effects of allowing access to the northeast corner of the Nantucket Lightship Area (**Figure 15**), the mean catch per tow for strata 1 and 8 were combined, giving a stratified mean weight per tow of 1.22 kg.

No size frequency data were available from the experimental fishery in Closed Area I to estimate the mean weight per tow. In lieu of this data, the mean weight of yellowtail flounder caught in Nantucket Lightship Area was applied to the mean number per tow in Closed Area I to estimate the catch rate. This assumption about mean size was applied to the stratified mean number per tow in strata 2, 3, and 5 to estimate the bycatch rate for Closed Area I in the area where access is proposed (**Figure 15**). The mean catch per 10-minute tow was estimated to be 1.76 kg.

Yellowtail flounder in the Nantucket Lightship Area are considered to be from the Southern New England stock. On the other hand, the boundary of Closed Area I overlaps the distribution of the Southern New England, Cape Cod, and Georges Bank yellowtail flounder stocks. Although previous tagging studies indicated a high degree of fidelity between adjacent stocks (Table 29), most of the yellowtail flounder caught in Closed Area I were close to the adjacent boundaries of all three stocks (comparing **Figure 15** for the stock boundaries and Appendix II for the catch distribution). The yellowtail caught in the scallop fishery within Closed Area I are therefore of indeterminate origin, at least during July and August.

#### **Discard mortality**

No studies of discard mortality of yellowtail flounder in scallop dredges is known and few conclusions can be drawn to justify a different discard mortality rate than assumed for the Closed Area II scallop fishery. Some tagged fish have been recaptured in Closed Area II after a few days at liberty, but the data are preliminary and no analysis has yet been performed. Another factor in estimating discard mortality is that some discarded dead fish may be counted more than once when they are recaptured by another vessel in the vicinity. Both factors (non-zero survival and recapture of dead discards) tend to overestimate the catch of yellowtail flounder.

**Table 21.** Mean stratified weight of yellowtail flounder caught on a 10-minute tow during a July to August experimental fishery.

Stratum	Area	Prop. of Total	# Stations	<i>Mean</i> numbers	Prop*Mean	% total	<i>Mean</i> weight (lbs	Prop*Mean )	% total	Mean fish weight (kg)
1	213	0.155	26	2.615	0.406	31.72	2.7	0.419	45.79	0.47
2	106	0.155	14	0.500	0.406	31.72	0.52		45.79	0.47
3	160	0.077	18	0.300	0.039	3.02	0.52		4.39 5.10	-
4	160	0.117	20	0.369	0.043	1.37	0.4		1.91	0.47
5	183	0.117		0.105	0.018	1.09	0.13	0.018	1.60	
6	183	0.133	19	0.105	0.014	1.09	0.11	0.015	1.60	
7	122	0.133	14	0.103	0.014	3.97	0.11	0.013	5.73	
8	91	0.069	10	3.900	0.051	20.21	4.02		29.13	0.47
9	153	0.000		0.375	0.239	33.98	0.39		4.75	0.47
Total	1371	1.000	148	0.004	1.281	100.00	0.59	0.044		
Total	1371	1.000	140	0.004	1.201	100.00		0.910	100.00	0.409
Lbs. Per Bus	shel =	7.5								
Dredge			Path			Dredge		1	Path Area	
Efficiency	0.4		Length nm	1		Width (ft)	30		nm^2	0.004934
•		'								•
St	ratum Are	Possible #	Minimum	Minimum	Efficiency	Efficiency	1			
Stratum	nm^2	of Tows	Biomass mi	iomass kkll	Adjusted-mi	djusted-kklk	os			
1	213	43168	384.0	0.8466	960	2.1166	•			
2	106	21483	36.5	0.0806	91	0.2014				
3	160	32427	42.9	0.0946	107	0.2365				
4	160	32427	16.5	0.0365	41	0.0912				
5	183	37088	13.2	0.0292	33	0.0730				
6	183	37088	13.2	0.0292	33	0.0730				
7	122	24725	48.0	0.1059	120	0.2647				
8	91	18443	244.6	0.5394	612	1.3486				
9	153	31008	411.3	0.9070	1028	2.2675				
Total	1371	277856	1210.4	2.6690	3026	6.6725	•			

**Table 22.** Observed movements of yellowtail flounder among stock areas (GOM: northern Gulf of Maine; CC: Cape Cod; GB: Georges Bank; SNE: Southern New England; MA: Mid-Atlantic) from Royce et al. (1959), Lux (1963a, 1963b), and Lux (unpublished). From NEFSC 1999a.

-	Recapture site						Proportional recaputres				
Release site	GOM	СС	GB	SNE	MA	sum	GOM	CC	GB	SNE	MA
CC	2	345	1	4	0	352	0.006	0.980	0.003	0.011	0.000
GB	0	0	148	8	0	156	0.000	0.000	0.949	0.051	0.000
SNE	0	5	16	578	14	613	0.000	0.008	0.026	0.943	0.023
MA	0	0	0	64	28	92	0.000	0.000	0.000	0.696	0.304
sum	2	350	165	654	42	1213					

Thus, the current policy to estimate yellowtail flounder catch is conservative and risk-averse, making the most conservative assumption on both counts. On the other hand, the TAC recommendation and current policy is to choose a yellowtail flounder TAC that is based on the total biomass and historic catch throughout the stock area. Any catches of yellowtail flounder outside of the closed areas therefore

exceed the historic distribution of catches by fleet. Across the stock, these two different policies (estimating catch and setting a TAC) hopefully balance out.

Sceintists and observers familiar with the effects of scallop fishing report that observable mortality is highly variable, ranging from near zero to near 100 percent. The mortality rate appears to depend on many factors, including bottom type, air and water temperature, and handling practices. A study by Robinson et al. (1993) using trawls with tow durations ranging from one to three hours, indicated that discard mortality for yellowtail flounder also had high variability, but few conclusions can be drawn to apply the results to scallop dredge gear.

Studies identified in Framework Adjustment 11 (NEFMC 1999a) show that larger twine tops can be effective in reducing finfish catch and the larger twine top in Closed Area II appears to have been one factor keeping yellowtail flounder catches lower than predicted. Reducing fishing time (dredge bottom time) and increasing escapement appear to be the best ways to reduce discard mortality of finfish bycatch.

## 6.2.6.1.9 Finfish bycatch TAC recommendations

Of the stocks that the Multispecies Monitoring Committee recommended TACs, Southern New England and Georges Bank yellowtail flounder are the only ones that have significant bycatch by scallop dredges. Table 30 shows the TAC recommendations and the reported landings for 1998, the most recent complete year available. Also shown is the percent of landings recorded from 1982 to 1993 by vessels using scallop dredges. Data since 1994 was not compiled because of the large management effects caused by the closure of the three groundfish areas to scallop vessels and by the low trip limit for groundfish bycatch (300 pounds). Using the latter data would underestimate the true catch rates that were associated with scallop fishing.

The Cape Cod stock has no TAC recommendation, so assuming that the catch remains constant (the stock is considered to be overfished), a TAC that is consistent with the proportion of landings coming from scallop vessels in 1982-1993 is 41 mt (Table 30). The yellowtail flounder landings from 1982 to 1993 were not available by stock and gear for Southern New England and Georges Bank stocks. The average landings of yellowtail flounder by vessels using scallop dredges was assumed to be 15 percent of total landings.

Taking into account the 47 mt annual average for the Cape Cod stock in 1982 to 1993, the average proportion of landings from the Southern New England and Georges Bank stock is 15 percent (Table 30). Applying this percentage to the 2000 TAC recommendations for all catches, this leaves 876 mt as a potential TAC for closed area access. The remaining 2,877 mt between the 2000 TAC for the stock and the sum of the TAC for closed area access (876 mt) and 1998 landings (1,816 mt for the Southern New England and Georges Bank stocks) by all gears other than dredges, will provide an adequate buffer to allow for increased catch by the multispecies fleet and by the scallop fleet when fishing outside of the groundfish closed areas.

Using this information and considering the stock boundaries, a potential approach is to set the TAC for the Nantucket Lightship Area at the TAC for Southern New England yellowtail flounder (Table 30). Since most of Closed Area I overlaps the Georges Bank stock, a pragmatic approach to setting the TACs for closed area access would be to have one TAC (725 mt) that applies to all catches by the scallop vessels within Closed Area I and Closed Area II. Setting separate TACs for each area would require an estimate of the proportion of the Georges Bank stock within each area, a factor that varies with time and stock condition.

**Table 23.** Proposed TACs for yellowtail flounder.

	1998 landings (mt)	Percent caught by scallop dredges (1982 - 1993)	2000 TAC (mt)	Proposed TAC for scallop fishery (mt)
Southern New England	369	15.0% <sup>34</sup>	951	50
Georges Bank	1800	15.0%	4618	693
Cape Cod	1244	3.3%	N/A	32
Nantucket Lightship Area TAC (mt)			50	
Closed Area I and Closed	d Area II TAC (mt)			725

#### 6.2.6.1.10 Conservation-neutral day-at-sea tradeoffs, effort estimates, and expected catch

A slight modification to the depletion model developed for Framework Adjustment 11 (Section 8.1.1.4) allowed to simultaneously estimate the combined effect on fishing effort in 'open' area from different trip allocations in each of the three areas. Through an iterative process, a day-at-sea tradeoff was calculated until the predicted total number of scallops with access was equal to the estimated number of scallops in the 'open' areas of Georges Bank and the Mid-Atlantic with no access to closed areas. Since fishing mortality is calculated on the basis of the proportion of total numbers removed from the exploitable size range of the stock, this should achieve a conservation-neutral effect with regard to scallops.

The purpose of the depletion model is to estimate and simulate a mass balance between fishing effort in the 'open' areas, the number of allocated trips in the closed areas and the day-at-sea tradeoffs, and the amount of unused days in the fishery. The calculations were done as if 120 days would be allocated to full-time limited access scallop vessels in 2000<sup>35</sup>. The estimate also assumed that 48 days would be allocated to part-time vessels, allowing them to take no more than 4 ten-day trips in the groundfish closed areas. Similarly, the estimate assumed that occasional vessels could only take one trip, since their annual day-at-sea allocations would total 10 days.

This assumption is important because if more days were allocated in 2000, vessels would have a greater opportunity to increase fishing effort that might not have otherwise been used if the access to closed areas did not occur<sup>36</sup>. In order to be conservation-neutral under this condition, the day-at-sea tradeoffs could be higher than those calculated here. Conversely, if less days are allocated in 2000, fewer unused days might become active due to closed area access and in fact insufficient days might exist to fish all of the allocated trips into closed areas. In this case, no day-at-sea tradeoff would be necessary because almost all of the effort in the closed areas would be transferred from fishing effort in the 'open' areas.

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<sup>&</sup>lt;sup>34</sup> The historic proportion of yellowtail flounder catch by vessels using scallop dredges was assumed to be 15 percent in Framework Adjustment 11.

<sup>&</sup>lt;sup>35</sup> Framework Adjustment 12, submitted by the Council in December 1999, would allocate 120 days for full-time, 48 days for part-time, and 10 days for occasional scallop vessels, if approved by the Secretary.

<sup>&</sup>lt;sup>36</sup> Although the Council submitted Framework Adjustment 12, recommending a 120 day-at-sea allocation, this point is repeated here to identify how conservation neutrality if the day-at-sea policies change or Framework Adjustment 12 is disapproved.

#### 6.2.6.1.10.1 Proposed Action

The analysis of the proposed action uses the same assumptions and methods that were used to estimate the effects of the alternatives considered but rejected (Section 6.2.6.1.10.2). The main difference between one of the alternatives with a 10,000 scallop possession limit and the proposed action is the day-at-sea tradeoffs that would be required. Under the 10,000 pound scallop possession limit alternative, the day-at-sea tradeoffs would be unique for each area, ranging from 9 to 12 days for each trip (Table 31). Since the CPUE in each area differs due to differences in biomass per m², the varying day-at-sea tradeoffs were chosen for analysis to impose a relatively constant fraction between days fished and days-at-sea accumulated in each closed area. To ease enforcement and improve compliance, the Council chose an constant 10 day-at-sea automatic accumulation for all three areas.

The estimated results for the proposed action is very similar to the rejected alternatives, except that the total bottom time is slightly higher and the total scallop yield is also slightly higher. Compared to the 10,000 pound rejected alternative (with varying day-at-sea accumulation), the days fished (i.e. "actual days-at-sea used") increases from 25,924 to 26,431 days (Table 31). The day-at-sea trade-off ratio thus declines from 1.57:1 to 1.51:1.

Since the day-at-sea trade-off or ratio is slightly less, there are more days-at-sea left to fish in the open areas. As a result, total scallop landings in the open areas is expected to be higher (9,534 mt vs. 9,276 mt; Table 31), while the expected landings from the closed area access program remain about the same as for the 10,000 pound rejected alternative. Total scallop landings are therefore a little higher for the proposed action (15,997 mt) than for the rejected alternatives. The expected landings are estimated to be 15 percent higher than the status quo (Table 31), whereas the total scallop landings would be 14 percent higher than the status quo. There are negligible differences in average meat yield, about 23.2 meats per pound.

Since the proposed action does not substantially affect the estimated days fished in the closed areas, all of the bycatch estimates are nearly equal to the 10,000 pound scallop possession limit rejected alternative. Total yellowtail bycatch is estimated to be 683 mt for all three areas under the proposed action. Cod, haddock, and barndoor skate bycatch was estimated for all three areas, but because the 1999 experimental fishery data had not been converted to weights, these estimates were given as a numeric index, to compare alternatives. Bycatch data for some species were only available from the Closed Area II experimental fishery in 1998<sup>37</sup>.

Estimates in greater detail are given in Appendix I. For the proposed action, the estimated days fished are 4,049 in Closed Area II, 3,310 in Closed Area I, and 2,055 in the Nantucket Lightship Area. From these estimates, combined with the number of limited access vessels, the number of allocated trips, and the 10 day-at-sea accumulation, the day-at-sea trade-off or ratio is estimated to be 1.32 for Closed Area II, 1.75 for Closed Area I, and 1.52 in the Nantucket Lightship Area. All other factors being equal, the access program is somewhat more conservative in Closed Area I than in other areas. On the other hand, profitability would actually be higher in Closed Area I, since catch rates are high and it takes less time to catch and land 10,000 pounds of scallop meats.

The estimated scallop catch is 2,422 mt from Closed Area II, 2,622 mt from Closed Area I, and 1,420 mt from the Nantucket Lightship Area (Appendix I). These estimated landings are naturally less

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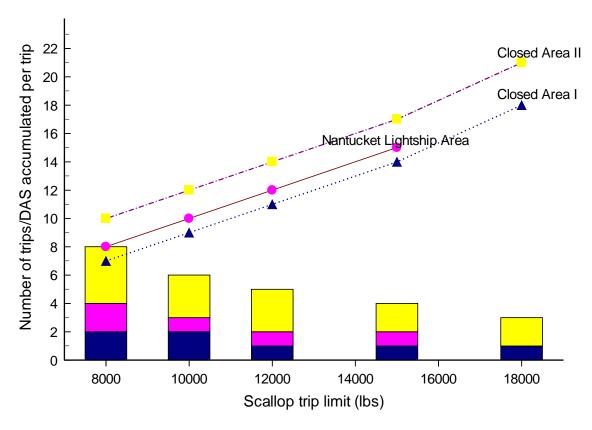
<sup>&</sup>lt;sup>37</sup> More data will be available from the experimental fishery during 1999 in Closed Area I and the Nantucket Lightship Area, as well as from logbook and sea sampling data from Closed Area II during 1999, but these data were not available for analysis at the time of this report.

than the TACs, because of the method used to allocate trips to limited access scallop vessels (Section 6.2.6.1.7). An in-season adjustment is therefore necessary to allow the fishery to catch the TAC if fewer vessels participate than expected or the average landings on closed area trips is less than 10,000 pounds. Using the same methods and the observed yellowtail flounder catches in the Closed Area II commercial scallop fishery in 1999 and the experimental Closed Area I and Nantucket Lightship Area fisheries in 1999, the expected yellowtail flounder bycatch is 472 mt from Closed Area II, 200 mt for Closed Area I, and 12 mt for the Nantucket Lightship Area (see Appendix I for detailed model results for each area). These bycatch estimates are less than the combined 725 mt yellowtail flounder TAC for Closed Area I and 2, and the 50 mt yellowtail flounder TAC for the Nantucket Lightship Area.

The above analysis does not include the effects of the access program for general category vessels (Section 5.1.7.3). On the other hand, it also excludes the five-percent TAC set-aside (Section 5.1.3.2.3). Total scallop yield and bycatch, including access by all eligible vessels, is therefore somewhat higher than those estimated above. The scallop landings and finfish bycatch could be as much as five-percent higher than estimated. Even so, the total catch including general category vessels is still likely to be below the total TAC for both scallops (Section 5.1.3.1) and yellowtail flounder (Section 5.1.4). In the case of yellowtail flounder, the combined catch would be about 705 mt as long as the dredges in use by general category vessels have finfish catches that are equivalent or less than the larger dredges that limited access scallop vessels may use.

#### 6.2.6.1.10.2 Alternatives Considered but Rejected

As described above, the potential trip allocations for each trip limit (Section 6.2.6.1.7) were evaluated for conservation-neutrality with respect to the predicted number of scallops caught for the entire resource. With a low trip limit and a higher allocation of trips, the day-at-sea tradeoff to achieve conservation-neutrality is less. As the trip limit increases, the day-at-sea tradeoff also increases, partly to compensate for the shorter total steam time associated with a lower number of trips to the closed areas. Except for the 18,000 pound trip limit option, the day-at-sea tradeoffs roughly correspond to one day accumulated for each 1,000 pounds landed. This relationship is slightly non-linear and increases a bit faster than the trip limit does (Figure 27).



**Figure 22.** Relationship between day-at-sea tradeoffs, scallop trip limits, and number of allocated trips for scallop fishing in Nantucket Lightship Area, Closed Area I, and Closed Area II. The stacking of the trips allocated is in the same order as the day-at-sea tradeoffs.

#### Methods

#### **Status** quo

Under status quo conditions (no access<sup>38</sup>), the model predicts that landings of 12,623 mt of landings<sup>39</sup> would occur for vessels using 26,994 days-at-sea with a 120 day allocation for full-time vessels. This analysis, like the one for Framework Adjustment 11, assumes that all vessels with active limited access permits (not including Confirmation of Permit Histories) fish like similarly-permitted vessels in the 1998 fishing year, but accounting for a reduction for 120 days in 2000 from 142 days in 1998 (see Section 4.1.4 of the SAFE report, NEFMC 1999b). Since no day-at-sea tradeoffs apply, the days-at-sea actually fished is equal to the total days-at-sea accumulated.

<sup>&</sup>lt;sup>38</sup> No access is considered to be status quo, because Framework Adjustment 11 expires on December 31, 1999.

<sup>&</sup>lt;sup>39</sup> The landings predicted by the depletion model are based on production constraints that are not included or as influential in either the empirical estimates for LPUE (Section 6.2.6.1.7) or the biological projections (Section 6.2.6.2 in Framework Adjustment 12; NEFMC 1999c).

With an average projected meat count of 27.0 scallops per pound predicted in 2000 by the biological projections (Section 6.2.6.2 in Framework Adjustment 12, NEFMC 1999c), these landings are equivalent to 827 million scallops (Table 31). The total bottom time, accounting for tow duration (average 60 minutes), gear processing time (average 15 minutes per tow), and steam time to and from port, is estimated to be 18,716 days (i.e. 449.184 hours).

#### Trip limit and trip allocation alternatives

The depletion model results for area access (8,000 to 18,000 lbs. scallop trip limit) assume that all eligible vessels fish the entire amount of allocated trips and that if sufficient unused days are available that the vessels use those days to fish or account for the higher accumulation of days (i.e. tradeoff). In Closed Area II, the model assumes that only 174 full-time and 4 part-time vessels take trips into the area, otherwise the model assumes that all eligible vessels (i.e. 328 vessels, Table 9 in Framework Adjustment 12; NEFMC 1999c) fish in the closed area for the allotted number of trips (Table 25). Each of the options shown in Table 31 were solved iteratively so that the predicted number of scallops caught with access equaled the total number of scallops caught without access, within the rounding error associated with a integer day-at-sea tradeoff.

Table 31 gives summary results for each of the five scallop trip limit options, ranging from 8,000 to 18,000 pounds of scallops per trip. The Council selected this range of options because a lower scallop possession limit was thought to be uneconomic for most full-time scallop vessels and higher scallop possession limits would not allow each limited access vessel to take at least one trip, without exceeding the TAC. A second consideration for determining this range is product quality. Long trips that land more than 18,000 pounds of scallops are likely to have product quality problems. More detailed results and input parameters by area is given in Appendix I. A more thorough description of the model is given in Section 8.1.1.4 of Framework Adjustment 11 (NEFMC 1999a).

#### **Results**

Except for the 18,000 pound option, with no trips into Nantucket Lightship Area<sup>40</sup>, the average size of scallops caught for the entire resource declines from 27.0 in the open areas of Georges Bank and the Mid-Atlantic to about 23 meats per pound. The landings from the closed areas reduce the average size of scallops caught throughout the resource. The biological projections (Table 12 in Framework Adjustment 12; NEFMC 1999c) predict that the average meat count for exploitable scallops will be 17.7 in Nantucket Lightship Area and Closed Area I and 22.7 in the southern part of Closed Area II (option 1). Because no trips to the Nantucket Lightship Area can be allotted for the 18,000 lbs. trip limit option (Table 25), the average size decreases to 24 meats per pound (Table 31)<sup>41</sup>.

Due to the larger average size for 784 to 811 million scallops caught, the landings ("Cumulative scallop catch in Table 31) from closed area access are about 12 to 14 percent higher than the status quo. Total yield for the 18,000 lbs. option declines to 9% above status quo due to the absence of yield from the Nantucket Lightship Area. For the 8,000 to 15,000 lbs. trip limit options, the landings estimates from the closed areas range from 6,231 to 6,896, or roughly 75 percent of the TAC (8,750 mt; Table 24).

The predicted landings are about 75 percent of the TAC because of the way trips are allocated. By choosing a trip limit common to all three areas and dividing the trip limit into the TAC for each area, a

<sup>&</sup>lt;sup>40</sup> The TAC is insufficient to allocate one trip to all 328 eligible vessels with an 18,000 lbs. trip limit. If all 328 vessels fish and land 18,000 lbs. each, the TAC would be exceeded.

<sup>&</sup>lt;sup>41</sup> The expected participation by vessels would exceed the Nantucket Lightship Area TAC with one trip and a scallop possession limit of 18,000 or more pounds.

non-integer number is rounded down to determine a trip allocation for an area (3.4 trips for Closed Area II, for example is rounded down to 3 trips). Across all three areas, the aggregate landings would therefore be less than the aggregate TAC. Raising the trip limits or the trip allocations by 25% could allow the scallop landings to exceed the TAC for one or two of the three areas, on the other hand.

The day-at-sea tradeoff (days actually fished compared to days accumulated for a closed area trip) increase from 1.44 to 1 with an 8,000 lbs. trip limit to 2.13 to 1 for an 18,000 lbs. trip limit. This is similar to the results for Framework Adjustment 11 (Table 25; NEFMC 1999a) where the tradeoff increased with increasing trip limits. Conversely, the total days accumulated by vessels fishing in the closed areas actually is highest with the lowest (i.e. 8,000 lbs.) trip limit. The balance is caused by the additional steam time and total day-at-sea accumulations with more trips with the smaller trip limit.

Overall, the total days accumulated is 16% higher than the status quo, due to the assumed utilization of unused days to account for the day-at-sea trade-off when unused days are available to the vessel. Day-at-sea actually fished, on the other hand, decline between 2 to 9 percent, depending on the trip limit, tradeoffs, and number of allocated trips (Table 31). Total dredge bottom time (calculated as the number of tows that can be taken in 24 hours given the predicted catch rate and shucking capacity with a seven man crew), declines from 17 to 28 percent.

Of all the estimated effects, the measure of dredge bottom time is probably the most appropriate to use for estimating net effects on bycatch and habitat. The difficulty in interpreting this statistic is that there is no way of quantifying precisely from where the transferred effort emanates. If all the effort came from areas that had equal or higher yellowtail flounder concentrations, for example, it would be easy to show conservation neutrality. Some of the effort, however, will be transferred out of the Mid-Atlantic where fewer yellowtail flounder exist<sup>42</sup>. Likewise, if all the effort came from areas having equal or more sensitive habitat, then it would be easy to demonstrate conservation neutrality.

Total bycatch is finally estimated in the same way that scallop catch is estimated, i.e. applying the experimental fishery catch rates to the total predicted fishing effort, modified by the constraints on production. Only the results of yellowtail flounder in Table 31 are expressed in total biomass for all three areas. Cod, haddock, monkfish, and barndoor skates are estimated in pounds of Closed Area II, but in numbers for Nantucket Lightship Area and Closed Area I. The totals for these species therefore are only an index for comparison between alternatives presented in Table 31. The estimates for all other bycatch species are for Closed Area II only, since bycatch information for the Nantucket Lightship Area and Closed Area I experimental fisheries were not available in time for this analysis.

The predicted yellowtail flounder bycatch ranges from 602 to 707 mt, less than the recommended TACs. The ratio of yellowtail flounder weight to scallop meat weight is between 9.4 and 13.5 percent, in line with the observations from Closed Area II. The experimental fishery bycatch rates in Nantucket Lightship Area and Closed Area I were consistent with observer data from Closed Area II, giving similar ratios for all three areas. Since the experimental fishery catch rates in Closed Area II were adjusted to be consistent with observer data in the 1999 fishery, the bycatch rates predicted here are lower than those (0.62) predicted in Framework Adjustment 11.

In general the level of bycatch increases with the scallop trip limit until the scallop trip limit (and associated trip allocations and day-at-sea tradeoffs) reaches 12,000 lbs. The predicted bycatch then declines for the 15,000 and 18,000 lbs. trip limit options. Why and how this response curve looks the way it does depends on a complex mix of factors taken into account by the model. Taking into account

<sup>&</sup>lt;sup>42</sup> A Mid-Atlantic stock of yellowtail flounder occurs around Hudson Canyon, but the regional average is less than the average bycatch of scallop vessels fishing in New England.

the uncertainty about stock biomass and changing seasonal distributions, however, these estimates are roughly equivalent to each other.

Table 24. Estimated catch and effort for various trip allocations and trip limits to achieve conservation-neutrality.

	Status quo No access	Trip limits t	•	ferred altern s, and day-at		a options	Proposed action
Trip limit	NO access	8,000	10.000	12.000	15.000	18.000	10,000
Allocated trips per vessel	-	8,000	10,000	12,000	13,000	10,000	10,000
Nantucket Lightship Area		2	1	1	1	0	1
Closed Area I		2	2	1	i	1	2
Closed Area II		4	3	3	2	2	3
Day-at-sea tradeoff - Nantucket Lightship Area	_	8	10	12	15		10
Day-at-sea tradeoff - Closed Area I	_	7	9	11	14	18	10
Day-at-sea tradeoff - Closed Area II	_	10	12	14	17	21	10
Days accumulated in closed areas	_	16,030	14,788	14,531	14,697	12,732	12,732
Days shifed from open areas to closed areas	_	11,757	10,515	10,258	10,424	8,459	8,459
Day accumulated in open areas	26,994	15,237	16,479	16,736	16,570	18,535	18,535
Days-at-sea accumulated	26,994	31,267	31,267	31,267	31,267	31,267	31,267
Change from status quo	20,00	16%	16%	16%	16%	16%	16%
Actual days-at-sea used	26,994	26,407	25,924	25,655	24,818	24,514	26,431
Change from status quo		-2%	-4%	-5%	-8%	-9%	
Tradeoff ratio	1.00	1.44 : 1	1.57 : 1	1.63 : 1	1.78 : 1	2.13 : 1	1.51 : 1
Total dredge bottom time (days)	18,716	13,415	14,306	14,613	14,049	15,608	14,670
Change from status quo	ŕ	-28%	-24%	-22%	-25%	-17%	-22%
Cumulative scallop catch (mt) - open areas		8,672	9,276	9,400	9,320	10,246	9,534
Cumulative scallop catch (mt) - closed area acces	ss	6,896	6,487	6,231	6,417	4,882	6,463
Cumulative scallop catch (mt)	13,875	15,568	15,764	15,631	15,737	15,128	15,997
Change from status quo		12%	14%	13%	13%	9%	15%
Cumulative scallop catch (millions)	827	784	802	811	803	809	817
Change from status quo		-5%	-3%	-2%	-3%	-2%	-1%
Average meat count - all areas	27.0	22.8	23.1	23.5	23.1	24.3	23.2
Yellowtail flounder bycatch (mt)		671	686	707	602	659	683
Ratio to scallop catch in closed areas		9.7%	10.6%	11.3%	9.4%	13.5%	10.6%
Winter flounder bycatch (mt) - Closed Area II		347	320	403	309	326	320
Four-spot flounder bycatch (mt) - Closed Area II		152	140	177	136	143	140
Windowpane flounder bycatch (mt) - Closed Area	ı II	532	490	617	474	500	490
Goosefish (aka monkfish) bycatch (mt) -Closed							
Area II	4,951	6,492	6,652	7,113	6,351	6,957	6,743
Change from status quo		31%	34%	44%	28%	41%	
Red hake bycatch (mt) - Closed Area II		38	35	45	34	36	35
Silver hake (aka whiting) bycatch (mt) - Closed Ar	rea II	28	25	32	25	26	25
Cod bycatch (abundance index)		14	20	10	12	17	20
Haddock bycatch (abundance index)		40	38	45	35	38	38
Barndoor skate bycatch (abundance index)		382	372	428	342	372	371
Lobster bycatch (mt) - Closed Area II		341	311	391	305	311	311
Large mesh multispecies catch (lbs.) per trip -							
Closed Area II		5,537	6,947	8,459	9,908	10,828	6,945

#### 6.2.6.1.11 Triggering a Suspension of the Closed Area Scallop Fishery

The threat that the accumulating total catch of scallops or yellowtail flounder bycatch might induce NMFS to suspend the closed area scallop fishery has the same biological and economic effects as a quota. This provision would encourage fishermen to take their allocated trips as rapidly as possible to avoid loosing out because the fishery closed before they took their trip. This measure would also encourage fishermen to catch and land the maximum amount of scallops they could on each trip before the fishery potentially closed. It would increase the incentive to deckload scallops and cheat on the scallop trip limit, possibly by transferring scallops at sea. These effects would, in turn, cause the fishery to close earlier than it would have had there not been a possibility to suspend the fishery earlier than planned.

In this case, the fishery's reaction to the threat of an early suspension of the fishery could cause vessels to land scallops as early in the season as possible, probably causing scallop prices to decline more than they otherwise would and decreasing the benefits of allowing the scallop fleet to fish for the large scallops within the closed areas. Another feedback mechanism, the knowledge by fish dealers that the landings have to be made in a short period of time, could cause the vessels to receive even less for their scallops than the general market dictates.

In addition to the economic and safety concerns that this measure causes, there are many uncertainties about the amount of scallops that will actually be landed for a given amount of fishing effort. This uncertainty arises because of the continuing disagreement about the dredge efficiency estimates. As a result, the potential causes of higher landings than expected are intractable from poor compliance with the restrictions, without other sources of confirming information.

### 6.2.6.2 Impacts on Habitat and Essential Fish Habitat (EFH) Assessment

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## 6.2.6.3 Impacts on Endangered Species and Other Protected Species

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## 6.2.6.4 Economic Impacts - Cost/benefit analysis of closed area access options

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#### 6.2.6.5 Social and Community Impacts

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#### 6.3 Finding of No Significant Impact (FONSI)

NOAA Administrative Order 216-6 provides guidance for the determination of significance of the impacts of fishery management plans and amendments. The five criteria to be considered are addressed below.

1. Can the proposed action be reasonably expected to jeopardize the long-term productive capability of any stocks that may be affected by the action?

The proposed action is part of an ongoing stock rebuilding programs established by Amendment 7 to the Atlantic Sea Scallop FMP and Amendment 9 to the Northeast Multispecies FMP that are based on reducing overall fishing mortality, by limiting fishing effort, prohibiting effort in select locations and seasons, and controlling fishing technology. More specifically, this action focuses on transferring or shifting scallop fishing effort from locations with predominately small scallops to areas with predominately larger scallops.

The scallops in Closed Area II are larger than in the now open areas because of the enhanced survival and increased biomass that resulted from a 4½-year closure to all gears capable of catching groundfish, including scallop dredges. Since the proposed action is shown to be conservation neutral in terms of total fishing mortality for the entire scallop resource, the total effect is to delay exploitation on younger scallops that predominate in the now open areas. This action is therefore expected to promote quicker rebuilding without increasing fishing mortality above the annual mortality target for 1999, established by Amendment 7.

The proposed action will temporarily open a groundfish closed area that had originally been closed to promote rapid rebuilding of groundfish stocks. While these stocks are not yet fully recovered, some additional catch can be taken within the constraints and target fishing mortality rates established by the Multispecies FMP. Although the estimated bycatch exceeds these multispecies limits differences in fishing practices compared with the 1998 experimental fishery, a TAC for yellowtail flounder, enhanced fishery monitoring, and a potential for suspending the closed area scallop fishery early will prevent the action from exceeding the Multispecies FMP thresholds.

2. Can the proposed action be reasonably expected to allow substantial damage to the ocean and coastal habitats?

The proposed action is expected to result in a decline or in no increase in the total amount of fishing time, measured by either contact time on the bottom or in days-at-sea fished (rather than accumulated). The Council specifically chose not to allow access by scallop vessels in other parts of the Nantucket Lightship Area, Closed Area I, and Closed Area II because of potential adverse habitat impacts. The proposed action is also expected to decrease the amount of scallop dredging in the now open areas, mitigating the negative effects within all three areas.

Measures are included in the proposed action to limit or mitigate habitat impacts. These include:

- Opening only areas that are less sensitive to disturbance and that will recover more quickly
- Reducing fishing effort (by increasing the day-at-sea accumulation for a closed area trip) in now open areas, possibly having more sensitive habitat than the area proposed to be opened
- Increasing the twine top mesh size to allow more small fish and invertebrates to escape during fishing.
- 3. Can the proposed action be reasonably expected to have an 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 plan, 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 10 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 three to four days. With a three-day steam time to and from port, the expected total trip length is six to seven days. The proposed action will therefore allow vessels the opportunity to fish in areas with fewer scallops to avoid bycatch, to fish with fewer crew members (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 the summer months, when weather is generally favorable. This is especially important for smaller or less seaworthy vessel to participate in the closed area scallop fishery without danger from hurricanes and nor'easters.

On the other hand, some alternatives could directly increase the incentives to fish as quickly as possible, characteristic of a derby fishery. These less attractive incentives that could have negative impacts on public health and safety are explained in Section 6.1.10.

4. Can the proposed action be reasonably expected to have an adverse effect on endangered, threatened species or a marine population?

The management measures proposed in Scallop Framework Adjustment 13/Multispecies Framework Adjustment 34 may affect, but are not likely to jeopardize the continued existence of endangered and threatened species. In a general sense, the effects of scallop fishing were reviewed during the approval of Amendment 7 and prior amendments to the Atlantic Sea Scallop FMP. This review resulted in a no jeopardy opinion because of the observed interactions with scallop fishing gear and the proposed management measures. This action is expected to cause total scallop fishing effort to remain at current levels or decline, depending on activation of latent fishing effort. No gear changes, except for a requirement of larger twine top mesh, are required or contemplated. The only effect will be a relocation of fishing effort to the open portion of Nantucket Lightship Area, Closed Area I, and Closed Area II on Georges Bank.

One species that might be adversely affected is the barndoor skate, *Raja laevis*. This species has been petitioned by the Center for Marine Conservation to be listed as an endangered species. Although there appears to be a significant decline in numbers in annual research survey data, a formal assessment of the barndoor skate population is underway, and the results are expected soon. The potential impacts on barndoor skates and whether it would jeopardize the population cannot be determined at this time.

5. Can the proposed action be reasonably expected to result in the cumulative adverse effects that could have a substantial effect on the target resource species or any related stocks that may be affected?

The measures in this framework are management adjustments to achieve optimum yield from the scallop resource without jeopardizing the stock rebuilding program for sea scallops or for groundfish. For this reason, the Council does not expect the action to have any cumulative adverse effect on the target resources. In Amendment 7, the Council recognized that effort shifts could occur that may have an adverse impact on other stocks, although the direction and magnitude of that impact could not be predicted. The proposed measures do not substantially change the effect of the stock rebuilding plan on any related stocks nor result in any cumulative adverse effect.

If anything, the proposed action reverses some of the adverse impacts that were associated with the original closure of portions of Georges Bank, from action taken by Framework Adjustment 5 for the Northeast Multispecies FMP. The loss of fishing areas on Georges Bank has caused scallop vessels to intensively target scallops in the now open areas and to target species in other fisheries, e.g. monkfish. This action is expected to partially reverse that effort shift, at least temporarily, and potentially increase fishing effort by some vessels that have unused days-at-sea. While the impacts of

the effort shift are more direct, some of the increased utilization of days-at-sea might help reduce the economic necessity and opportunity to participate in other fisheries, e.g. monkfish.

Based on the preceding criteria and analysis, the Council proposes a finding of no significant impact.

FONSI STATEMENT: In view of the analysis presented in this document and in the FSEIS for
Amendment 7 to the Atlantic Sea Scallop Fishery Management Plan and Amendment 9 to the Northeast
Multispecies Fishery Management Plan, the proposed action will not significantly affect the quality of
the human environment with specific reference to the criteria contained in NAO 216-6 implementing
the National Environmental Policy Act. Accordingly, the preparation of a Supplemental Environmental
Impact Statement for this proposed action is not necessary.

Date

# 6.4 Regulatory Impact Review (RIR)

**Assistant Administrator** 

For Fisheries, NOAA

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## 6.5 Coastal Zone Management Act (CZMA)

Upon submission of Amendment 7 to the Atlantic Sea Scallop FMP and Amendment 9 to the Northeast Multispecies FMP, the Council also conducted a review of the FMPs for its consistency with the coastal zone management plans of the affected states. All the states concurred with the Council's consistency determinations. See Section 8.6 of Amendment 7 and Section 5.4 of Amendment 9 for the Council's consistency determinations. The response letters of the states are on file at the Council office. The Council has determined that the proposed action is within the scope of measures already reviewed for consistency with states' CZM plans and is, therefore, consistent with those plans. The Council has notified potentially affected states of this action and of its determination that the action is consistent with its earlier determination.

## 6.6 Paperwork Reduction Act (PRA)

The PRA analysis was prepared and submitted under a different cover to expedite the approval process.

#### 7.0 GLOSSARY

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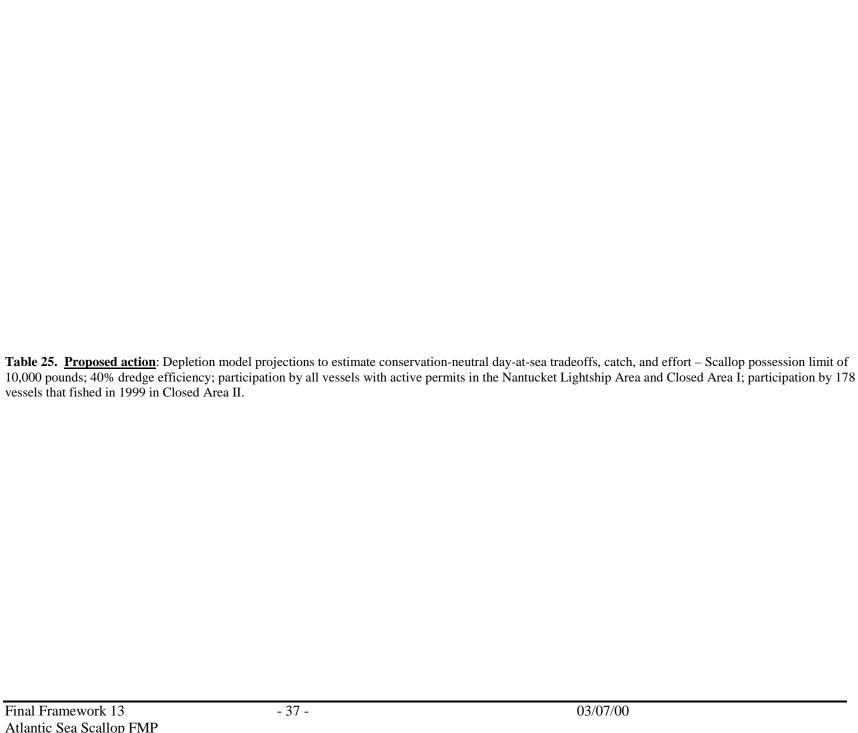
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## 9.0 ACKNOWLEDGEMENTS

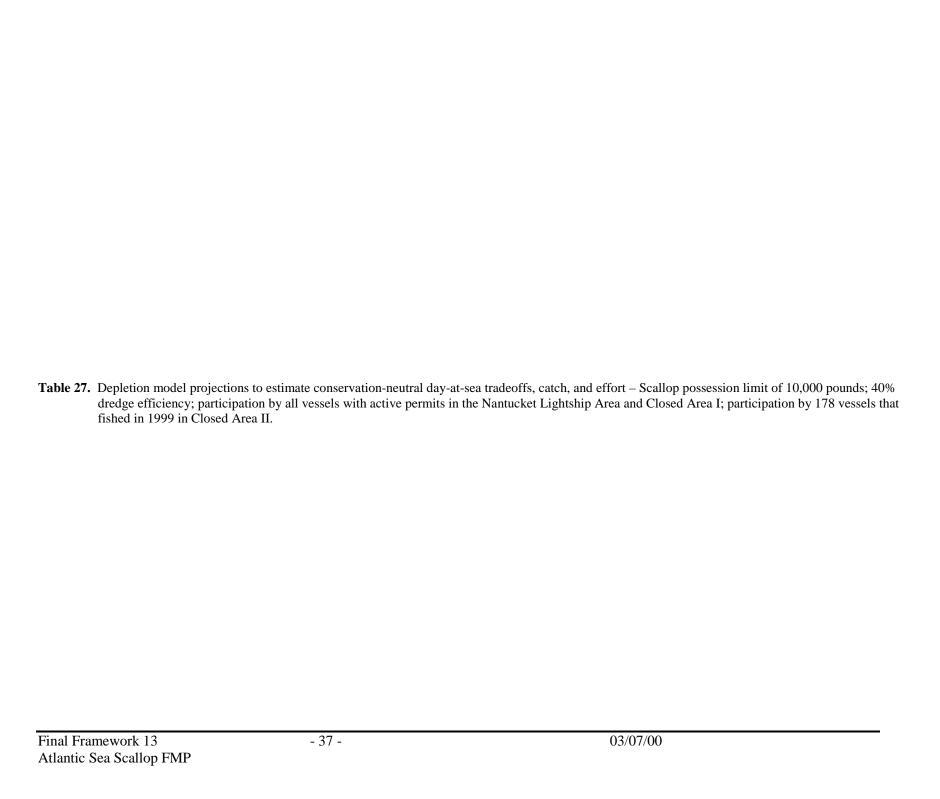
Much of the data, analyses, and graphics included in this document were the result of hard work by the employees of NMFS (Woods Hole) and CMAST (New Bedford). The data for Closed Area I and Closed Area II would not have been gathered without the hard work and efforts by the crew and captains of the F/V Santa Maria and the F/V Kathy Marie that participated in the experimental fishery and the partnership between CMAST and the Fishermen's Survival Fund. Special thanks should go to Dr. Paul Rago, Dr. Kevin Stokesbury, Dr. Steven Murawski, and Dr. Dvora Hart for their expert assistance in preparing the analyses and graphs contained in this document. Draft text and analyses were also contributed by technical staff members including Andrew Applegate, Demet Haksever, Patricia Fiorelli, Michael Pentony, and Thomas Nies.

## **10.0 WRITTEN COMMENTS**

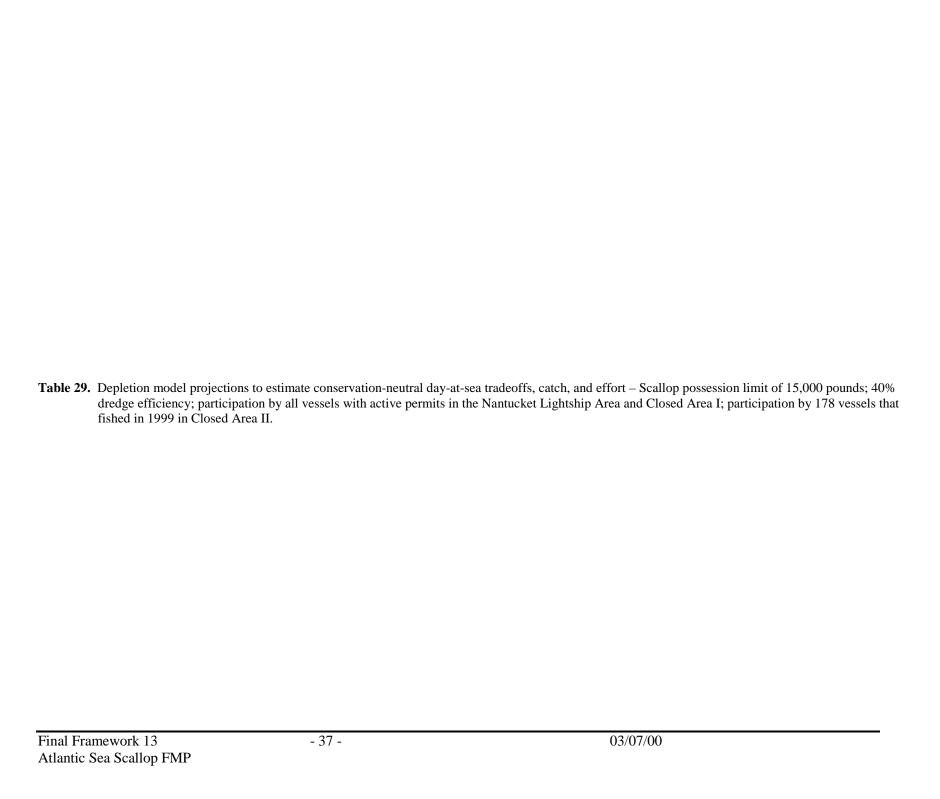
I1.0 Apppendix I: Depl Effort, Scallop Catcl Access Alternatives	h, And Finfish By	ections Of Scallo catch For Variou	op Fishing s Closed Area

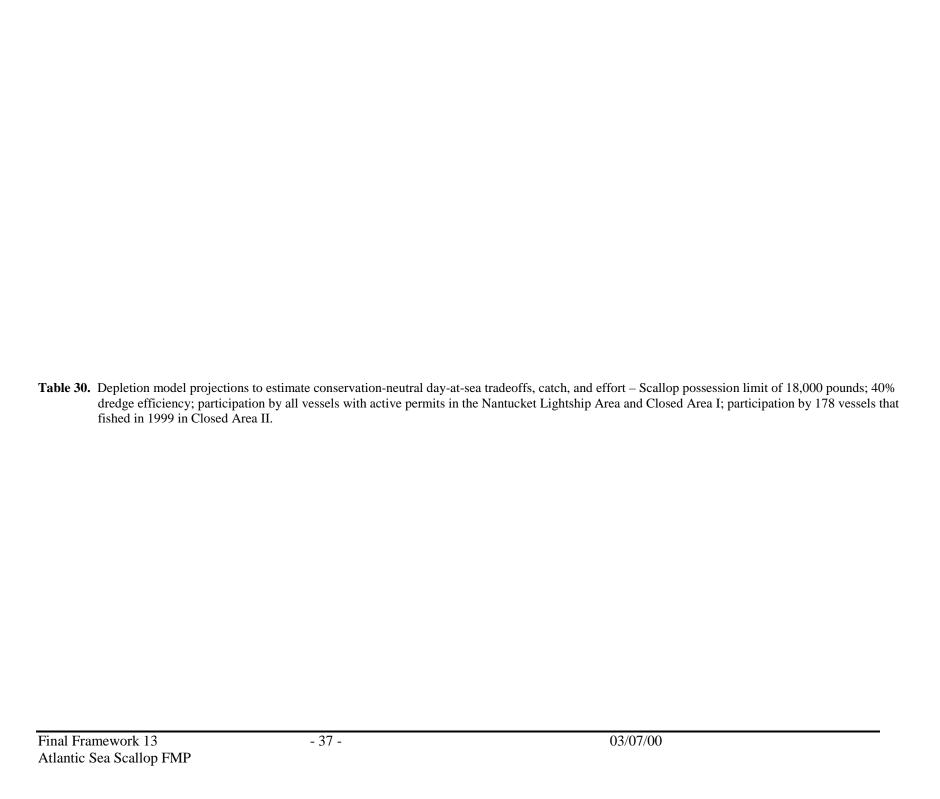












12.0 Appendix II: Preliminary analysis of the commercial dredge experimental fisheries in Nantucket Lightship Area and Closed Area I during July to August 1999

13.0 Appendix III: Joint Scallop and Groundfish PDT Report – October 17, 1997

14.0 Appendix IV: Report	Sea Scallop Indust	try Bycatch Reduction	Program

.0 Appendix V: Enforcement Comments from the US Coast Guar on Management Options in Framework Adjustment 13	d

16.0 Appendix V: Final <i>(15-Nov-99</i> from the Georges Bank Sea Sca	