

“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

Since the multispecies closed areas on Georges Bank and Nantucket Shoals became year round closures in 1994, lobster fishermen have viewed the areas as a haven where they can fish with little danger of losing gear to mobile fishermen. While exact estimates of increases in effort in these areas are not available, lobstermen say the amount of gear in these areas has increased. Opening the areas to scallop fishermen may lead to gear conflicts between lobster trap and scallop dredge vessels.

In the spring of 1999, the Council's Gear Conflict Committee held a meeting to identify the areas and time periods most valuable to lobster trap fishermen in the Nantucket Lightship Closed Area (NLSA) and Closed Area II (CAII). In the Nantucket Lightship Area, lobster fishing is most prevalent from July through December. Most gear is set parallel to the 43000 loran lines, set in 20 to 40 fathoms. Because surf clam vessels operate in the western part of the closed area, most lobster fishing occurs between the 14000 and 13900 loran lines, in the southwestern corner of the area that is proposed to be open. Lobster fishermen suggested that if the area to be opened does not extend south and west of the 13900 loran line, there will be few gear conflicts (**Figure 15**). In late summer, one fisherman noted that there is lobster activity of the NLSA south of 40°30' N and bounded by 69°20' W and 69°50' W.

In CAII, most lobster fishing occurs between mid-June and November. Lobster fishing generally starts at the northern end of the closed area and moves south over the course of the season. Traps are usually set parallel to the 13000 loran line. Gear may be set south of 41° 30' N. latitude, one line proposed as a northern limit for scallop access to the closed area.

As a result of the Gear Conflict Committee meeting, an informal meeting was held March 11, 1999 between lobster and scallop fishermen. Attended by about five representatives of each gear type, this group suggested that gear conflicts could be avoided through a combination of area and time limitations for each gear type. For the NLSA, the entire area could be opened to scallop gear from January 1 through June 30 because there is little lobster fishing during this period. From July 1 through December

31, the area east of the 13900 loran line could be opened to scallop gear, with the area west of the line remaining closed to scallop gear during this time period (Figure 15). For CAII, the group suggested that from January 1 through July 31 the area south of 41° 30' N. latitude could be open to scallop vessels. From August 1 through December 31, the group suggested the boundary shift to an east-west line at 41° 15' N. latitude to 67° 05' W. longitude, then north to 41° 30' N. latitude (Figure 16). The members of the scallop industry that were present were agreeable to these provisions provided there were no further restrictions and no additional closed areas.

In the spring, the Gear Conflict Committee did not ask for industry input on lobster fishing in Closed Area I because opening that area was not pursued. During development of the annual scallop adjustment framework in late summer 1999, the Council began to consider access to Closed Area I. The Gear Conflict Committee was unable to schedule a meeting to identify areas of concern prior to development of the framework document. The Atlantic Offshore Lobstermen's Association (AOLA) provided some information on lobster activity in Closed Area I. They cautioned however, that this information may not reflect the activity of all lobster fishers. According to AOLA, most lobster activity in Closed Area I takes place in the southern corner of the area (Figure 17). Lobstering begins in this area as early as June. Much of the activity takes place south of the 43600 loran line during the months of August through November.

Information provided by the lobster industry was supplemented by examining landings of lobsters reported through the vessel trip report (VTR) database in calendar years 1997 and 1998. The lobster regulations (50 CFR 649) do not include a mandatory reporting system. Many lobster vessels also have other federal permits, however, that require them to report all catches to the VTR system. Fishermen are required to report the location of catches in the VTR, but can do so using three-digit statistical areas, latitude and longitude, or loran lines. Unfortunately, while all of the trips (over 43,000 in calendar year 1997 and nearly 40,000 in calendar year 1998) in the database are assigned to a three-digit statistical area, only about one-sixth of the trips reported latitude and longitudes. The three-digit statistical area information does not provide enough spatial detail to determine where lobster fishing occurred in the closed areas in calendar years 1997 and 1998.

Landings of lobsters from the trips with recorded positions are summarized by ten-minute square in Figure 18 (trips using pots/traps only). The information available for all of the areas is inconclusive because there are few trips with recorded positions in these areas. CA II is the area with the most reported trips. In this area, the few trips with detailed positions seem to confirm that most lobster fishing activity occurs north of 41° N latitude, particularly in calendar year 1997. In 1998, there were some trips along the southern boundary of CA II, but most landings still came from areas north of 41° N latitude.

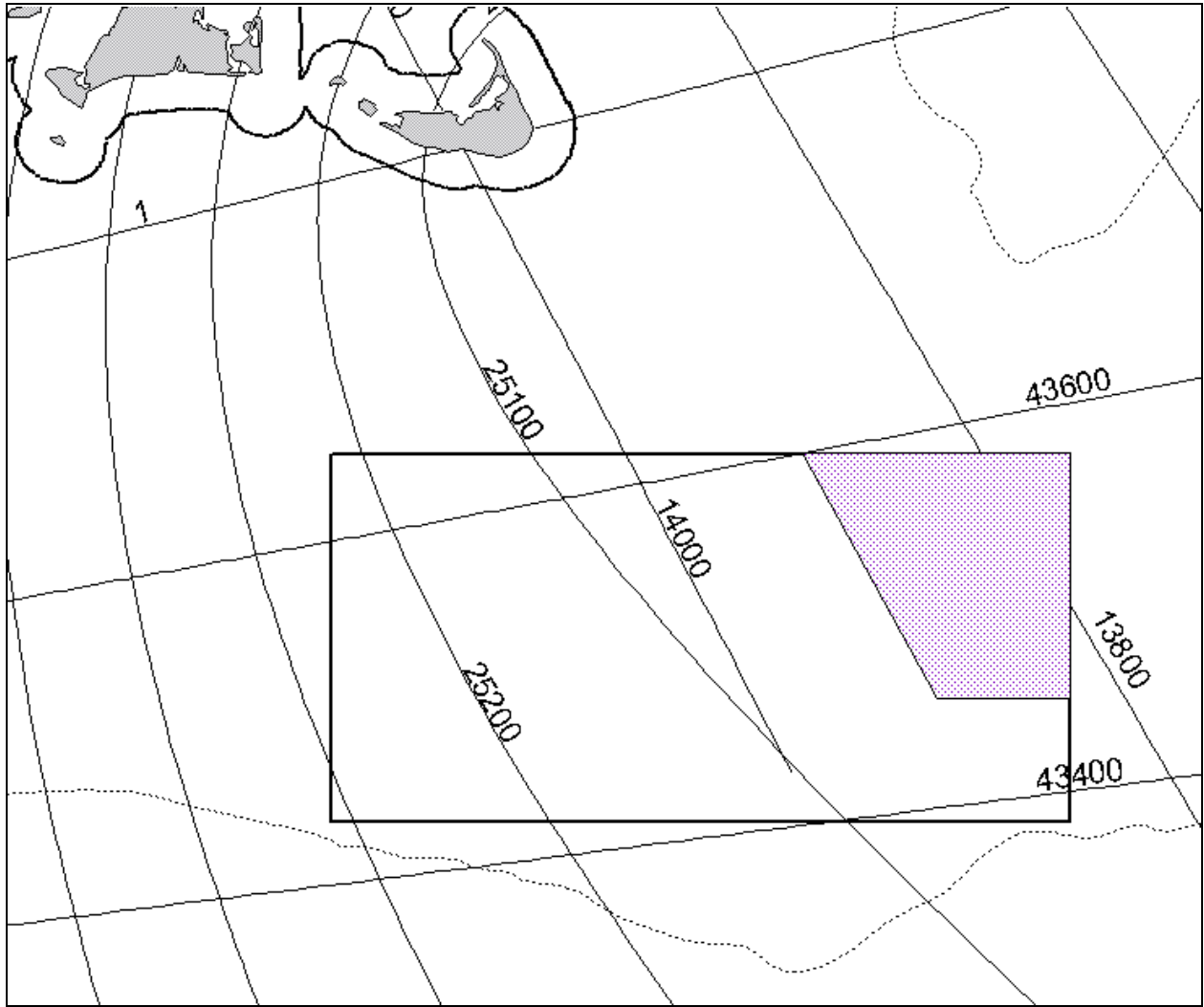


Figure 15. Possible area to be opened to scallop fishermen that would minimize conflicts with lobster gear. Area is defined by following coordinates (western boundary approximately matches 13900 loran line):

- | | | |
|-----|--------|----------|
| (1) | 40-30N | 69-00W |
| (2) | 40-30N | 69-14.5W |
| (3) | 40-50N | 69-29W |
| (4) | 40-50N | 69-00W |
| (5) | 40-30N | 69-00W |

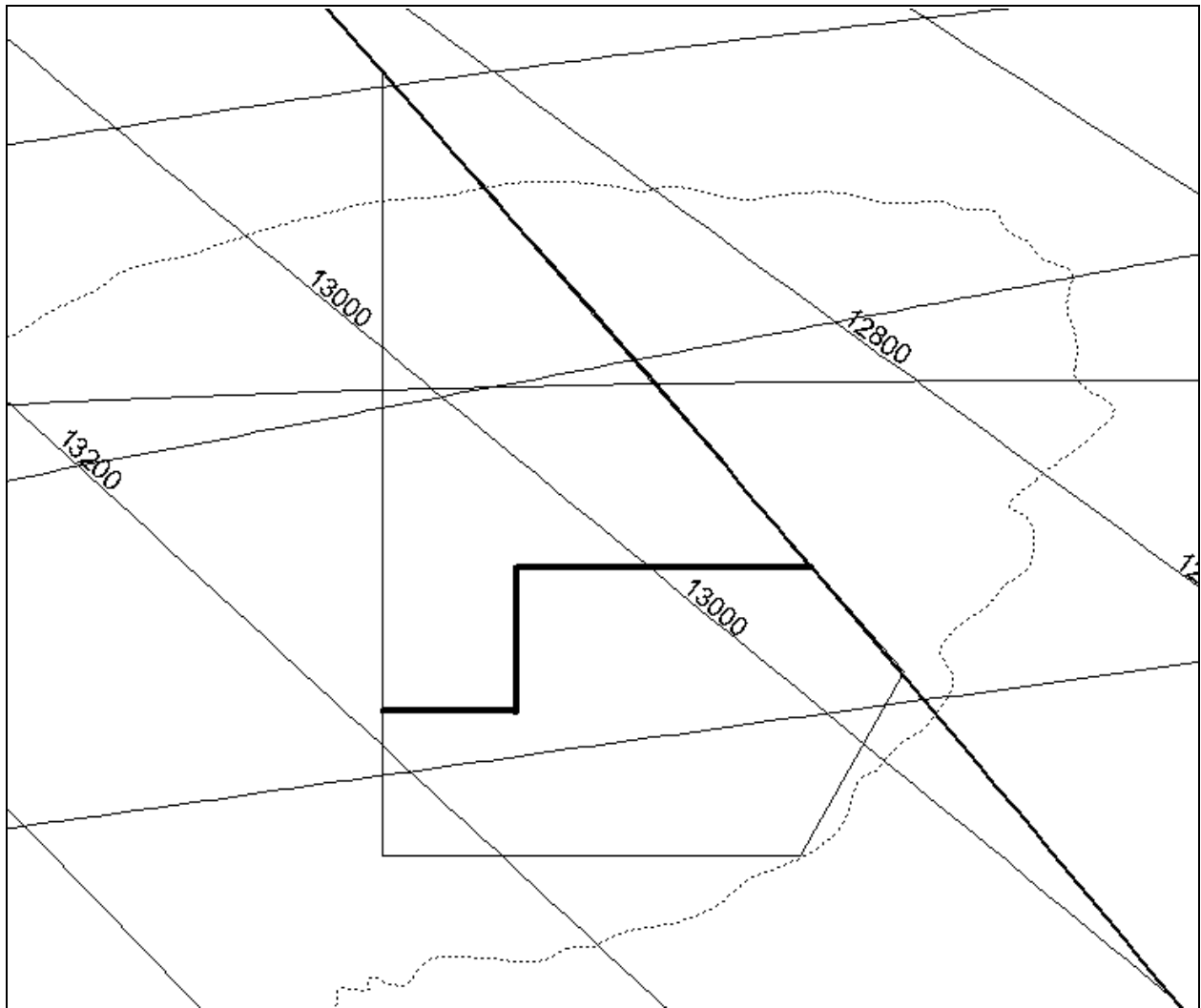


Figure 16. Recommended boundary line for northern limit of area open to scallop vessels, August 1 to December 31 in Closed Area II. According to a group of representatives from both industries, this line would minimize gear interactions between scallop vessels and scallopers.

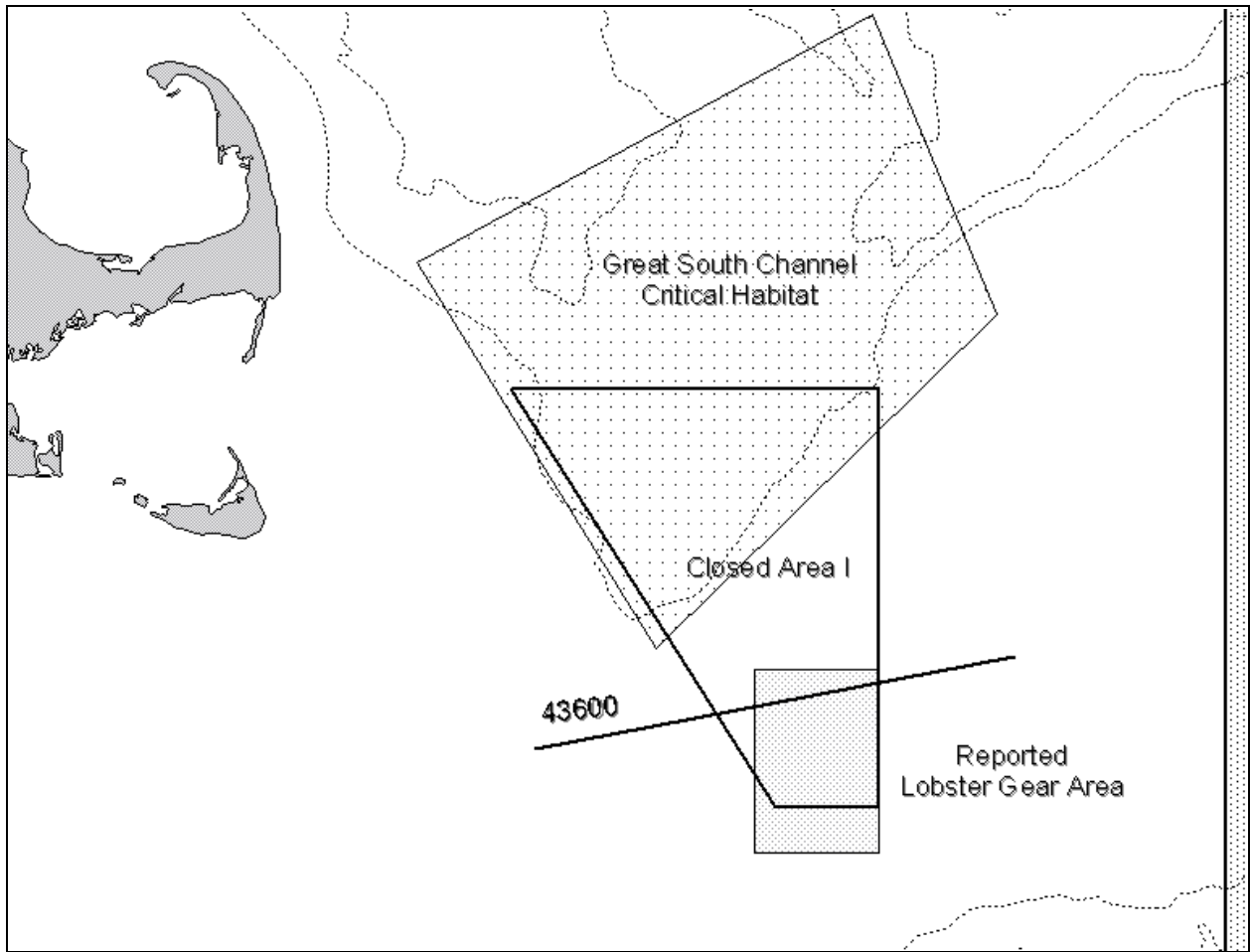


Figure 17. Areas of lobster fishing activity in the vicinity of Closed Area I, as reported by the Atlantic Offshore Lobstermen's Association. Shaded area is bounded by the following coordinates:

41-00N 68-48W
 41-00N 68-30W
 40-40N 68-30W
 40-40N 68-48W



Figure 18. Calendar year 1997 lobster landings (pots/traps only) by ten minute square (landings in pounds)
 (Source: NMFS VTR database)

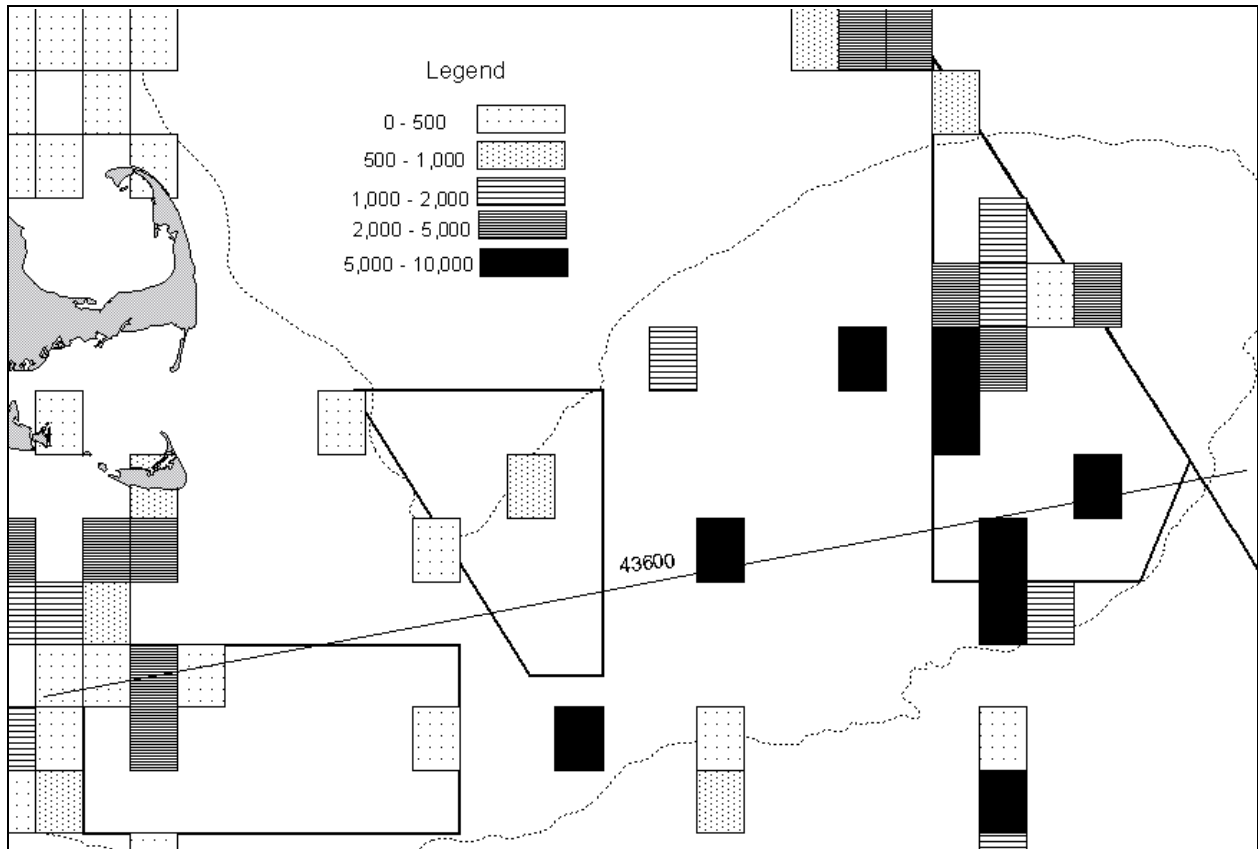


Figure 19. Calendar year 1998 lobster landings (pots/traps only) by ten minute square (landings in pounds)
 (Source: NMFS VTR database)

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.